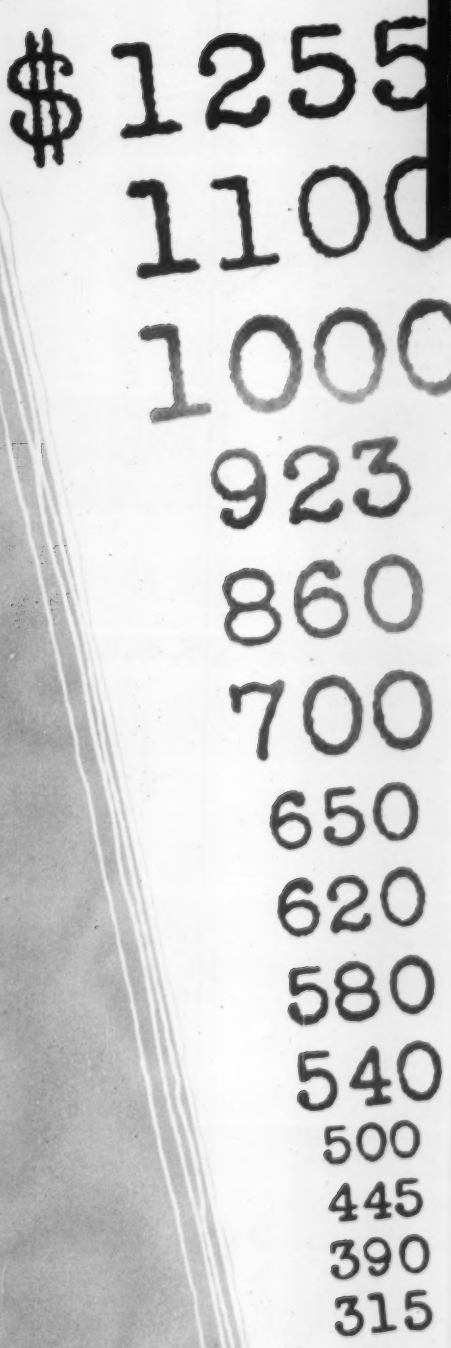
JULY 25, 1955

STEEL
The Metalworking Weekly

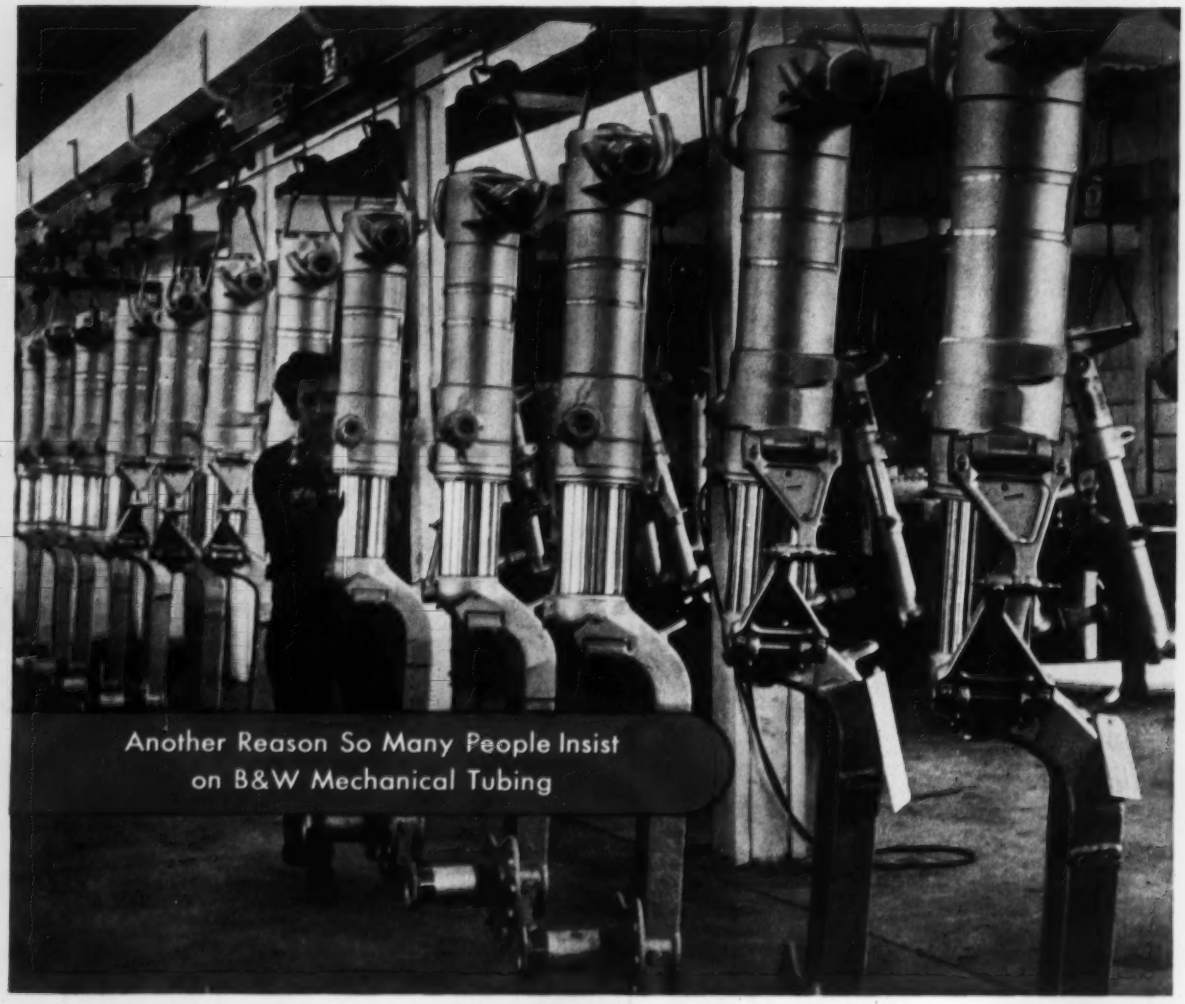


What Cost Price Fighting?

Despite generally good business, the practice continues in many metalworking lines. For tips on how to minimize it, see page 41

✔ Out of a Vacuum—Tougher Metals
page 88

✔ Why Structurals Remain Tight
page 143



BUILDING THE LITTLE CLICK THAT SAYS ALL IS WELL

Every pilot who ever flew an airplane knows that the world's most reassuring sound is the little click that says "landing gear down *and locked.*" It's important because it means a safe landing. It insures coming in on your wheels instead of your belly.

Providing that reassurance is the job of Menasco Manufacturing Company, which specializes in the design and manufacture of landing gear components for the country's leading airframe manufacturers. Critical landing gear design and construction factors include weight conservation, space limitation, faster and more economical production methods, and the increasing takeoff and landing speeds of modern aircraft.

Since 1943 Menasco has been welding B&W aircraft quality tubing of 4340 steel to various kinds of forged shapes to produce the completed piston or cylinders. Menasco's improved pressure welding, called Uniweld, produces high-quality parts that cannot be produced in a single piece by conventional forging methods. The strength and quality of these Uniweld parts is equivalent to that obtained if it had been possible to produce them in a single forged piece.

For your own equivalent of "the little click that says all is well," insist on B&W Mechanical Tubing. Mr. Tubes, your link to B&W, has the whole story. *Or write for Bulletin TB-361S.*

B&W
TUBULAR PRODUCTS DIVISION

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing.
Welded Stainless Steel Tubing
Alliance, Ohio: Welded Carbon Steel Tubing
Milwaukee, Wis.: Seamless Welding Fittings

TA-5044(M)

BOLTING SPEEDS ERECTION of New Building in Dallas

This graceful new structure is the Adolphus Tower Building, a 30-story office building in Dallas, Texas. Originally its steel frame had been designed for riveted construction, and the two lower tiers were erected in this manner. But to speed up erection, Bethlehem High-Strength Bolts were used to join the remainder of the steel skeleton. This enabled the builder to meet the rapid erection schedule that had been set for the job.

Bethlehem High-Strength Bolts save installation time, and retain their full clamping force, thus providing permanently tight joints. They are particularly well suited for construction in hospital and school zones, as installation can be accomplished with minimum noise.

Bethlehem High-Strength Bolts are used with two hardened washers, and can be installed in holes drilled or punched originally for rivets of the same diameter. The nut is driven up to predetermined tension by a calibrated pneumatic impact wrench.

Bethlehem High-Strength Bolts are made of carbon steel in sizes to meet virtually every construction need. They are heat-treated by quenching and tempering, and meet every requirement of ASTM Specification A-325.

The nearest Bethlehem sales office will be pleased to answer your questions about the use of Bethlehem High-Strength Bolts. Call them today. Or write direct to us at Bethlehem, Pa.

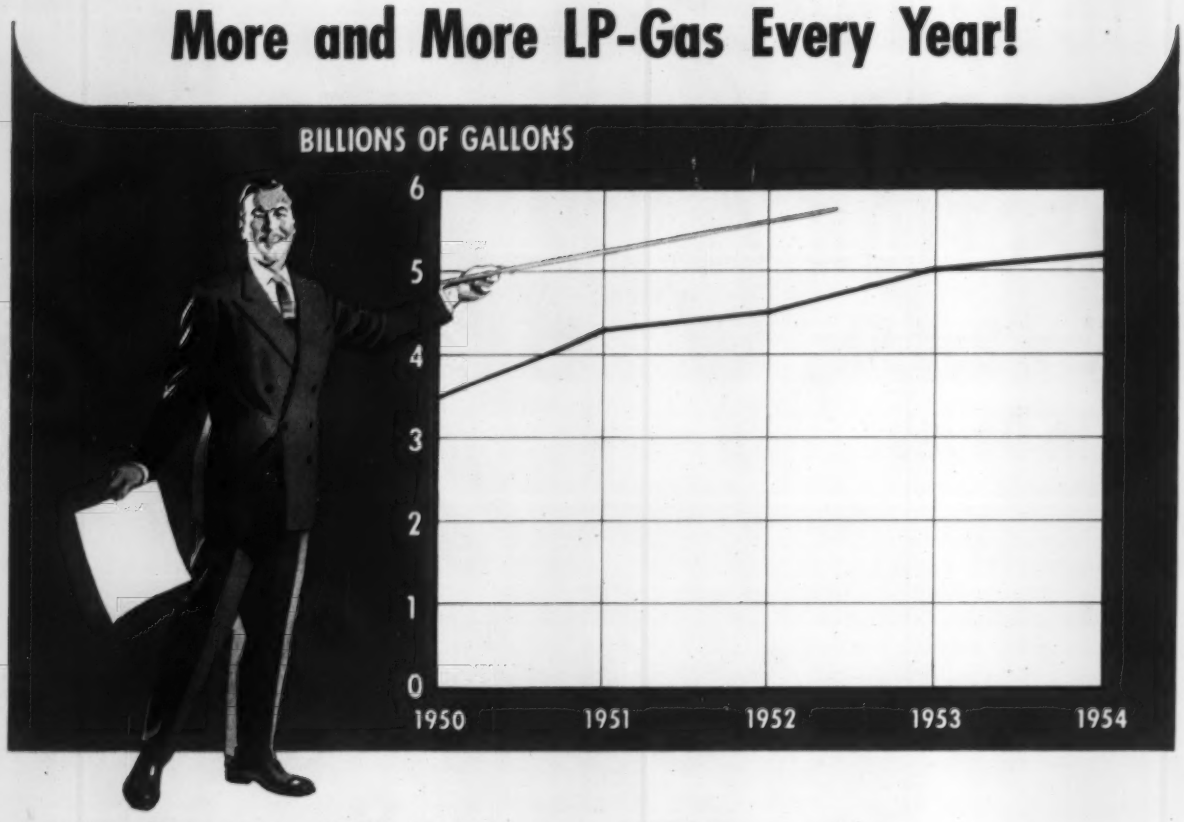
30-story Adolphus Tower Building, Dallas. *Owner:* Dallas Hotel Co.; *Architect:* Wyatt C. Hedrick, Dallas; *General Contractor:* Henry C. Beck Company, Dallas-Atlanta.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

America Is Using More and More LP-Gas Every Year!



It's Performance That Counts

PHILGAS® Is America's Largest Selling Brand of LP-Gas!

What's the reason behind Philgas popularity? In one word . . . performance! Philgas is a pure, clean gas containing no harmful contaminants to injure your products. You get high thermal content at low cost. And because a Philgas system is completely automatic, labor costs also are lower. You save money with Philgas!

Leading industries are cutting fuel and labor costs, *both*, with Philgas. They are using this clean-burning fuel for a variety of heating processes, for space heating in the plant, and as a fuel for trucks and heavy duty equipment! To find out how much you can save, write for more information about Philgas.

Philgas is our name for high quality LP-Gas—Bottled Gas—Butane—Propane.

Phillips 66 Philgas
THE ALL-PURPOSE FUEL

PHILLIPS PETROLEUM COMPANY

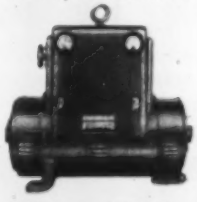
Sales Department • Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Houston, Tex., Indianapolis, Ind., Kansas City, Mo., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tampa, Fla., Tulsa, Okla., Wichita, Kans.

Try! Compare

. . . the new HOBART Arc Welders

. . . and you'll see why you get more actual benefits in dollar savings and INCREASED PROFITS! HOBART'S outstanding design and special features bring higher performance, faster welding and lower cost operation in a compact and easy to move unit.



For Automatic Welding

Bantam Champ

AC Transformer Welders

For Faster Production

Hobart welders will do your production work better and faster. They're available in 200, 300, 400 and 600 ampere sizes to do any job—light or heavy. An on the job comparison will prove their value . . . job after job you'll see Hobart outperform other welders, saving time and cutting production costs.

300 amp. Electric Portable

300 amp. Gas Engine Drive

250 amp. "Pipeliner"

200 amp. Gas Engine Drive

For Repair and Maintenance

For repair and maintenance work Hobart offers a wide range of welders in electric motor driven or gas engine drive—air or water cooled—portable or stationary. Now you can have AC welding and AC power for repair or construction jobs away from power lines—may also be used as an emergency power source. Find out how you can get better, lower cost welding by mailing the attached coupon . . . no obligation, of course.

HOBART electrodes

Try them . . . a comparison will prove you can get more top quality welding per day. Hobart electrodes are made for every application of AC or DC welding. Tell us the type work you do and we'll send samples for you to try!

HOBART TROY OHIO **WELDERS**

Hobart Brothers Co., Box ST-75, Troy, Ohio

"One of the world's largest builders of arc welding equipment"

CLIP THIS COUPON AND MAIL TODAY!

HOBART BROTHERS CO., BOX ST-75, TROY, OHIO, Ph. 21223

☐ Without obligation—send FREE catalog on the new Hobart Simplified Arc Welders ☐ Electrode Catalog

Price on ..... amp. Hobart Welder

☐ Electric Drive ☐ Gas Engine Drive ☐ AC Transformer

☐ Combination Welder or 110 v. AC Power

☐ Powromatic for Automatic Welding.

☐ FREE Welder's Vest Pocket Guide

NAME _____ POSITION _____

FIRM _____

ADDRESS _____

HOBART WELDERS, ELECTRODES

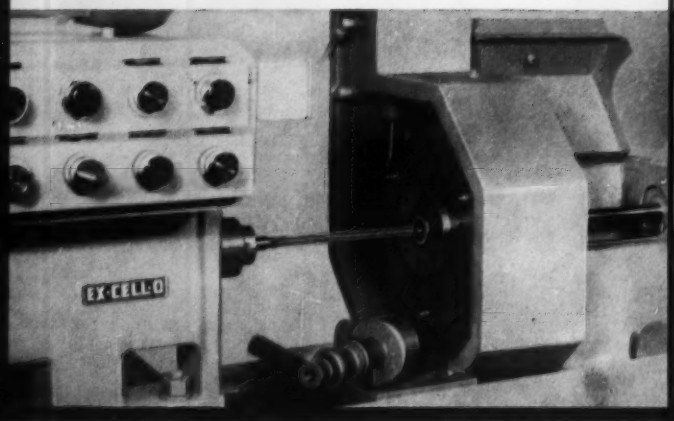


Photo with guards removed shows drill about to enter the guide bushing in the center of the chuck. Coolant oil under high pressure is directed through the spindle and drill, washing chips out of the single flute.

On this cast-iron distributor base, holes are machined straight and round within .0005"; diameter is also held within .0005"; finish does not exceed 15 rms. The hole is completed from start to finish in 30 seconds.

XLO
EX-CELL-O for PRECISION

Today's method by EX-CELL-O for reducing your costs

BOR-DRIL

for straight, accurate holes from solid with good finish—on standard machines

...OOL SHOW
CHICAGO, SEPT. 6-17
BOOTH 1319

Equipped to Bor-Dril is this standard Style 2112-A, the smallest single-end model in the Ex-Cell-O Precision Boring Machine line. These machines are rigid, have easily adjustable feeds, vibration-free spindles. Multiple spindle applications for high production.

For more information on Bor-Dril, or for a quotation on a machine equipped for this work, call in your local Ex-Cell-O Representative or contact Ex-Cell-O in Detroit.

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

55-16

STEEL
The Metalworking Weekly

JULY 25, 1955
Vol. 137 No. 4

METALWORKING OUTLOOK, 35

The Editor's Views, 39

What Cost Price Fighting? 41
How you can avoid industrial price wars

Closed-Circuit Communications, 46
TV may help you solve mass communications problems

Management at Work, 51
GE's Rader: "People are our greatest asset"

Clean-up in Plumbing Goods, 52
Construction booms sales, but re-equipment volume holds, too

Freight Car Shortage Threatens, 53
ICC moves to prevent goods from piling up

Windows of Washington, 48
Mirrors of Motordom, 55
The Business Trend, 59
Men of Industry, 63
New Products, 115
Behind the Scenes, 6
Letters to the Editors, 10
Calendar of Meetings, 27
Machine Topics, 102
New Literature, 124

TECHNICAL OUTLOOK, 83

Machining—1955: Planing and Shaping, 84
The fifth article in a series on machining

Round Trip Ticket to Efficiency, 86
Planned routes and unit loads speed in-plant movement

Out of a Vacuum: Tougher Metals, 88
Stress-rupture life gets a big boost from vacuum melting

Salt Cover Saves Lead, 92
Losses drop 55 per cent on a steel rod patenting line

CO_2 System Guards Production, 98
Gas gives blanket protection against quench oil fires

Aluminum Guards the Surface, 110
It started with auto valves. Now dipcoating branches out

MARKET OUTLOOK, 129

Steel Operations, 129
Price Comparisons, 130
Nonferrous Roundup, 132
Nonferrous Prices, 134
Steel Prices, begin 136
Scrap Prices, 156

Editorial & Business Staffs, 16. Advertising Index, 161. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 W. 39th St., New York 18, N.Y.

Published every Monday by Penton Publishing Co., Penton Bldg., Cleveland 13, O. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year, $7.50; two years, $15; all other countries, one year, $20. Single copies (current issues), 50 cents. Metalworking Yearbook issue, $2. Accepted as controlled circulation publication at Cleveland.
Copyright, 1955, Penton Publishing Co.

This Sturdy Precision
Tool Grinder
BY EX-CELL-O

Style 44-A, is one of the newest in a complete line made by Ex-Cell-O for sharpening carbides, high speed steels, and cast alloys. All are double end models, equipped for face grinding on cup-type wheels; for efficient and economical conditioning of single-point tools.

XLO

Tables are big to give good support to the tools. They are easily adjustable.

There are Ex-Cell-O Tool Grinders to suit the needs of every shop, large or small. For data on this complete Tool Grinder line, write Ex-Cell-O in Detroit, or call your local Ex-Cell-O representative.

55-6

EX-CELL-O
CORPORATION
DETROIT 32, MICHIGAN

ULBRICH
Stainless
Steels

Immediate Delivery from Stock

STRIP - Flat Wire and other Stainless Steels

a foot or a pound and up

to your EXACT requirements from the BIGGEST little Converting Mill in the country.

Complete Inventory

Phone:
Wallingford 9-7771
Wallingford, Conn.
Established 1924

PHOSPHATE COATING WITH

GRANODRAW

FACILITATES COLD FORMING OPERATIONS

The drawing of wire, bars, tubing, stampings, shells, shell cases, cold heading, and many other cold forming operations—including the cold extrusion of steel—are greatly facilitated by the application of a "Granodraw" zinc phosphate coating and a suitable lubricant prior to working.

Write for Descriptive Folder

AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.
Detroit, Mich. Niles, Calif. Windsor, Ont.

behind the scenes

Price Cutting . . . Ugh!

You, of course, run your business efficiently. You examine costs, check the market, watch competition, measure values and finally set a fair price on your products or services. Your books balance, income exceeds outgo, net and gross are properly proportionate, and it's fun being in business. Then, bang! Somebody starts cutting prices, and you're like a speedboat without a rudder: You're heading somewhere fast, but you're afraid to look.

The editors of STEEL have been deeply impressed by the calamities that attend destructive price cutting, and they wondered what industry could do about it.

Now, price cutting is a big problem; it is painful and delicate, and it isn't easy to get folks to talk about it. It is a curious phenomenon, too: In this year of grace, 1955, metalworking is experiencing perhaps its second greatest year, yet unsound price cutting is breaking out like a rash. It is common everywhere; in heat treating, casting, metal rope and wire, etc. If you were a gardener you would liken the plague to Japanese beetles: God knows how they start, or where they come from, but when you got 'em, friends, you got trouble.

The editors of STEEL did a lot of investigating, probing and interviewing, and they came up with an article (page 41) that examines the problem and makes specific suggestions. So if you're plagued by Japanese beetles—pardon, price cutting—the article will comfort you.

More Problems

It's silly to go from real problems to passing annoyances, but since this is National Inventors Week we thought it might be a contribution to public welfare if we were to list some problems and invite our inventors to tear into them. On second thought, perhaps *you* are bothered by certain conditions or situations that require the services of an inventor; if so, relay them to ol' Shrdlu, and we'll relay them, in turn, to our two dozen faithful readers.

Among our problems are these: You talk to a man on the phone, and he won't get off, but drones on and on.

You raise raspberry bushes secure in the knowledge that the stalks are too fragile for squirrels to climb, or for birds to light on. Only humming birds can hang in the air, and they don't like raspberries, anyway, so you resign yourself to eating red raspberry pies until you burst. So what happens? Robins, starlings, blackbirds, flickers and other assorted fowl make like humming birds; squirrels and chipmunks acquire the art of levitation, and all you got is stripped bushes.

Go on vacation, and you spend more than you bargained for. Take in a show that is highly recommended, and lo, it stinks. Admire your wife's dress and she'll tell you she's had it so long she's sick of it. Tell a customer that he is looking exceptionally well, and he will tell you that he is about to enter a hospital for a total evisceration. Surely, faced with situations like these, we can keep inventors busy for years to come.

The Clever Bellboy

If it takes 10 prime hawgs ten minutes to sneak under a fence, then 55 will escape in an hour; not 60, as you might imagine without thinking.

Most of the problems that have been sent in, as well as those we have published, are mostly old stuff to puzzle fans, so we do our best to jazz them up a little. Here's the story of a honeymoon couple in a hotel. The bride called the bellhop, and gave him a note to deliver to her husband in the lobby. The boy opened it and read: "IBQ'P DBQ LRQ LC QEFP ARJM; QEB YBIIELM FP X ZOBBM!"

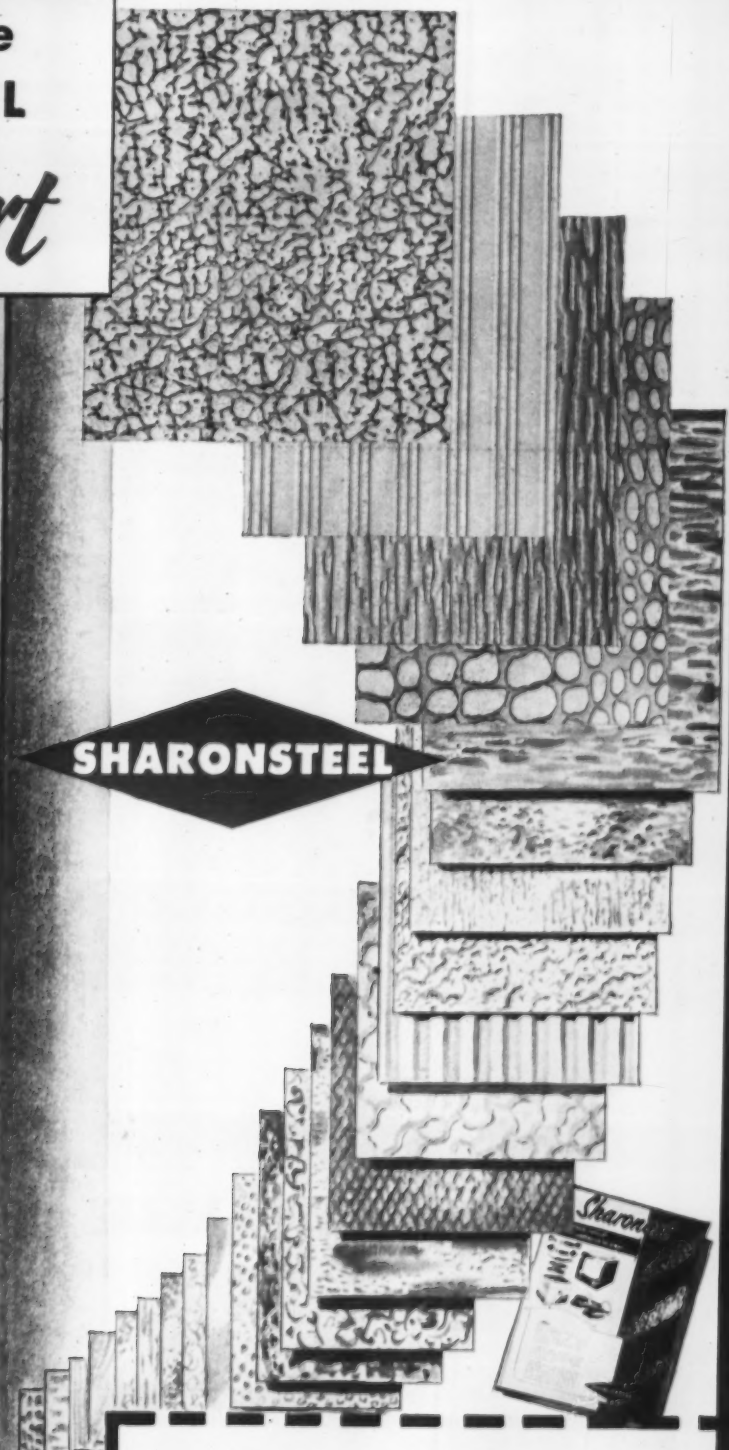
Before he delivered the note, he wrote another and slipped it under the bride's door: "EB JFDEQ YB X ZOBBM, JXAXJ, YRQ EB XFK'Q ARJY."

Can you translate these notes?

Shrdlu

(Metalworking Outlook—Page 35)

To Change the *Style*
Change the STEEL
Switch To Sharonart



The name SHARONART identifies Rolled-in design patterns produced by Sharon Steel Corporation and Divisions.

SHARONART offers texture patterns to the appearance designer. Usually it has been necessary for the manufacturer to combine another material with steel to obtain such finishes.

This textured material can be fabricated by any usual steel processing methods.

Complete flexibility of design is available with SHARONART. Any repetitive design you prepare can be reproduced on steel.

Investment in one pattern is relatively s m a l l. Changes in your product's apperance are simple to arrange.

Technical advice and assistance are available to customers wishing to adopt this new material.

A brochure giving complete information of our sizes, pattern designs and numbers, product uses, pictures of designs and products made from SHARONART steels and methods of fabrication is available (see coupon).

SHARON STEEL CORPORATION
Sharon, Pennsylvania

DISTRICT SALES OFFICES
CHICAGO, CINCINNATI, CLEVELAND, DAYTON, DETROIT, GRAND RAPIDS, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, NEW YORK, PHILADELPHIA, ROCHESTER, SAN FRANCISCO, SHARON, MONTREAL, QUE., TORONTO, ONT.

SHARON STEEL CORPORATION
Sharon, Pennsylvania

Please send "SHARONART surface rolled patterns" in steel.

Name _____

Position _____

Company _____

City _____ Zone ____ State _____

Leveling Machine
for hot, mild steel
¼" to ⅝" x 100" wide

BIRDSBORO Plate levelers are designed, engineered and built to your requirements

Designers and Builders of:

STEEL MILL MACHINERY
HYDRAULIC PRESSES
CRUSHING MACHINERY
SPECIAL MACHINERY
STEEL CASTINGS
Weldments "CAST-WELD" Design
ROLLS: Steel, Alloy Iron, Alloy Steel

• When you want to improve and simplify your leveling jobs, add up all the factors you want in your new plate leveler . . . then call the BIRDSBORO ENGINEER. Let him show you the cost-saving advantages of a smooth-running, maintenance-free BIRDSBORO leveler.

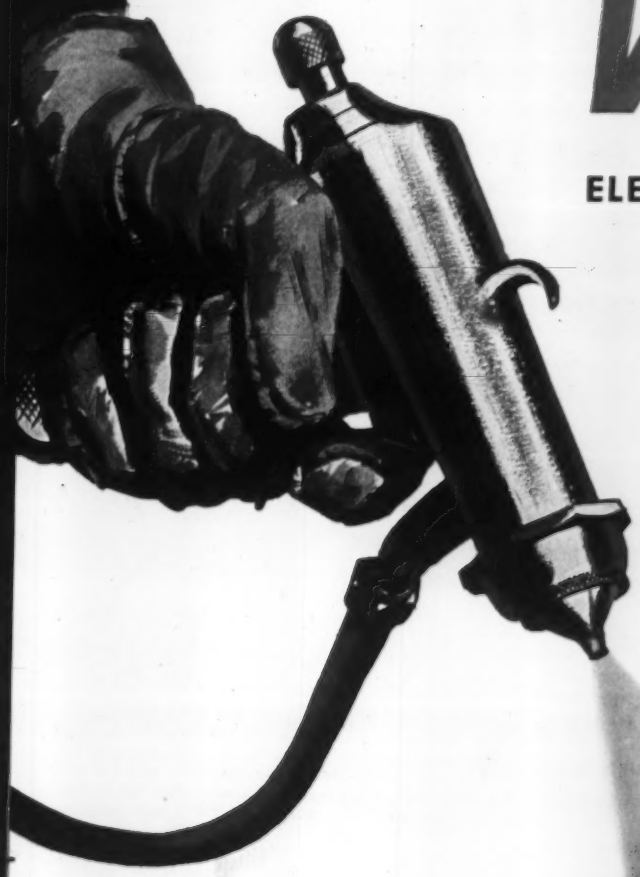
Hot or cold, heavy or light plate leveling jobs and all the problems connected with them will be met by the diversified experience of BIRDSBORO personnel — designers, engineers, and production men. Put them to work for you. BIRDSBORO is the answer for leveling.

MM-44-55

BIRDSBORO

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA. Offices in Birdsboro, Pa. and Pittsburgh, Pa.

Want prolonged paint adherence?



Weirzin

ELECTROLYTIC ZINC-COATED SHEET

How to paint, enamel, lacquer or lithograph metal parts is often a perplexing problem. Poor adherence means dissatisfied customers.

Weirzin has a simple solution, proved highly satisfactory, in a tight malleable zinc coating that is *actually part of the steel*. The coat remains intact even under extreme temperature and humidity. What's more, neither punching nor forming nor deep drawing can rupture the even deposit. Thus underfilm corrosion cannot form and, as a result, paint does not crack, chip or flake.

This electrolytic zinc-coated steel—with or without chemical treatment—is available in coils, in cut lengths, in all regular widths and gauges. Find out how easily leading manufacturers satisfy their customers with this exceptional product. Phone or write now.

WEIRTON STEEL COMPANY

Weirton, West Virginia

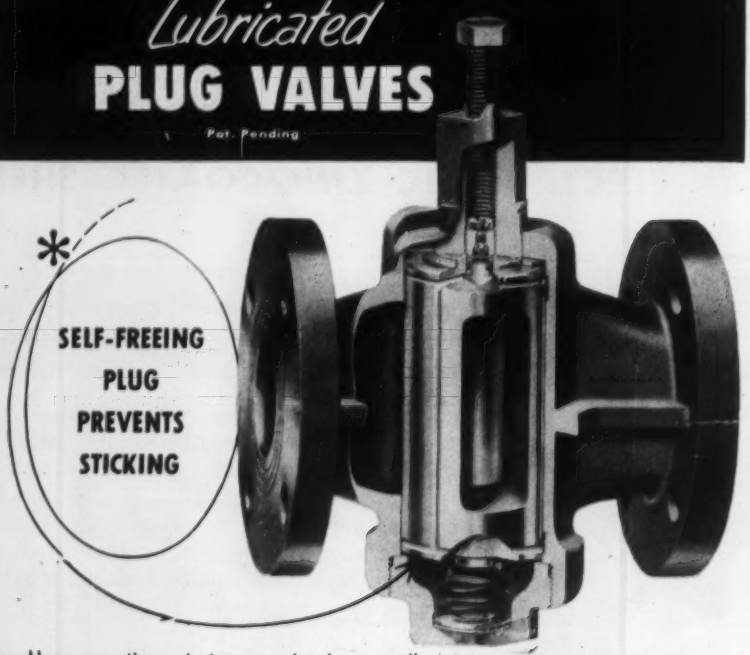
NATIONAL STEEL CORPORATION

No. 5* of . . .

12 REASONS WHY
YOU SHOULD BUY AND USE
LOW-PRICED

HOMESTEAD
Lubricated
PLUG VALVES

Pat. Pending



Homestead's exclusive completely controlled lubricant system positively prevents sticking by its instant, piston-like movement of the plug downward at the start of each lubrication. Spring and line pressure return it to stem-sealed position.

This is only **one reason why you should buy and use low-priced** HOMESTEAD LUBRICATED PLUG VALVES.

HERE ARE ALL TWELVE

1. Extra long valve life assured by very close tolerance between sealing surfaces.
2. Straight line fluid flow—streamlined ports—minimum resistance to flow—minimum pressure drop.
3. Triple head seal—two lubricant rings and reinforced Teflon stem seal prevent leakage.
4. Easy turning—plug floated on Teflon washer and reinforced Teflon ring.
5. Leak-proof double ball and lubricant sealed check valve. No springs. No maintenance.
6. Full-threaded screw prevents dirt being forced into lubricant system.
7. Quarter-turn fully opens or closes.
8. Reinforced Teflon stem seal—no cold flow—continuous, positive seal.
9. Seating surfaces protected in both open and closed positions.
10. High pressure lubricant system provides full lubricant seal around ports.
11. Self-freeing plug prevents sticking.
12. Two lubricants handle most services.

FOR CATALOG AND COMPLETE DETAILS MAIL COUPON TODAY

Without obligation, send Reference Book 39—Section 5 on HOMESTEAD LUBRICATED PLUG VALVES.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

HOMESTEAD VALVE MANUFACTURING COMPANY

Serving Since 1892

P. O. BOX 22 CORAOPOLIS, PA.

LETTERS
TO THE EDITORS

Four-Paragraph Picture

The last four paragraphs of your editorial, "This Changing Industry" (July 4, page 33), seem to sum up the whole economic picture. We have called the attention of reporters of the *Dixiesteel Ladle* to it.

Michael F. Wiedl
Assistant Advertising Manager
Atlantic Steel Co.
Atlanta

. . . statistical and inspirational data this editorial contains prompts us to ask your permission to reprint it in our publication, *Friendly Tips.*

Jay O. Ferch
Sales Department
Modern Equipment Co.
Port Washington, Wis.

We are impressed with your editorial and would like to make reprints of it for distribution to our sales people. May we have your permission to do so?

K. P. Rindfleisch
Vice President, Sales
United States Steel Supply
Division of United States Steel Corp.
Chicago

• *Permission granted.*

Binding Lauded

Your 1955 Program for Management series so far has been interesting and informative. I also must compliment your publisher for binding the articles of this series in such a way that when torn from the mazagine, the pages remain in a unit.

Joseph Kantell
Industrial Engineer
Art Steel Co. Inc.
New York

Replacement Cost Problems

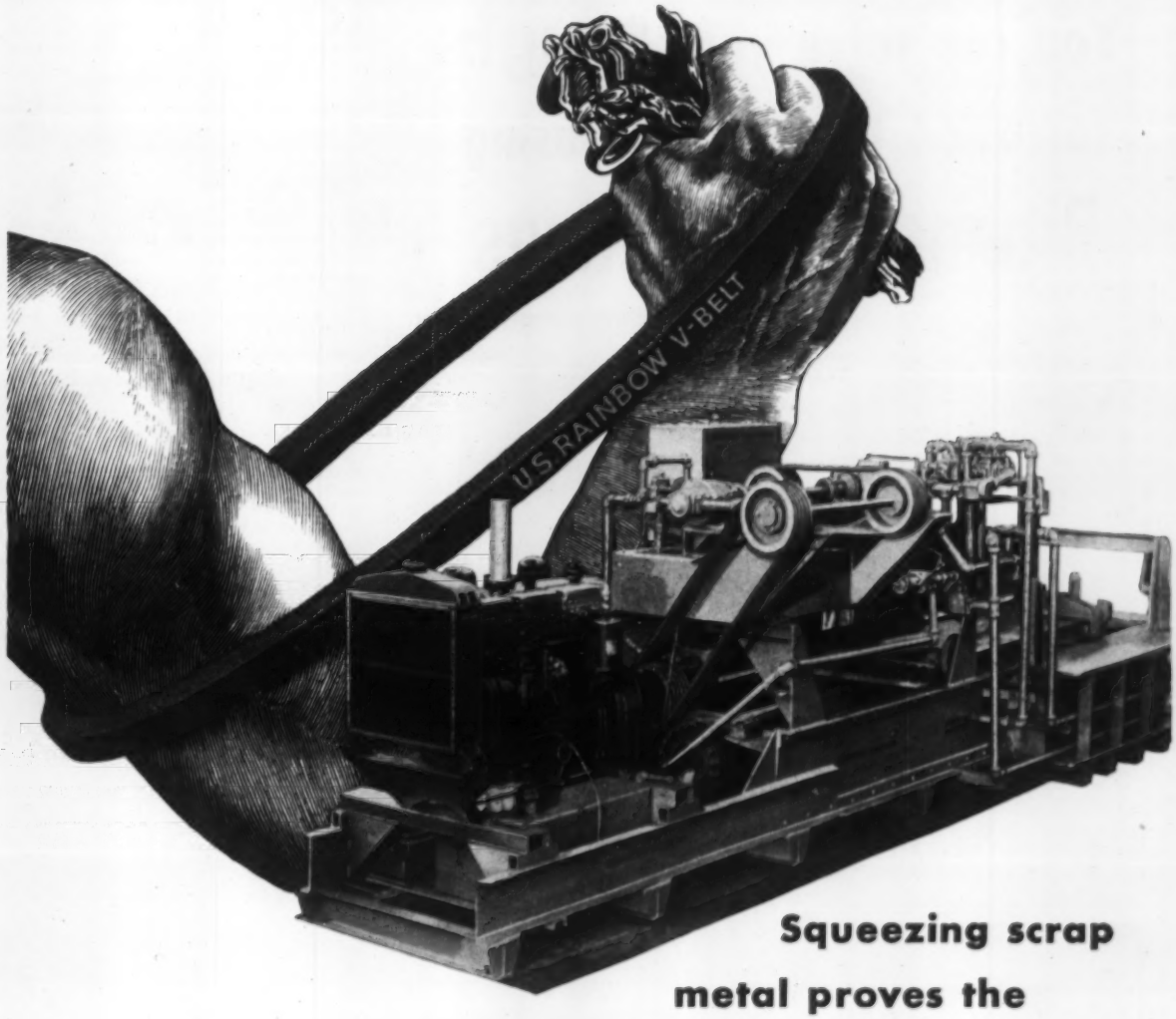
I have some comments about your article, "When To Re-Equip" (June 20, page 99).

One of the real problems (which MAPI and your Guide does not put much stress on) is the fact that equipment does not run all the time. When it isn't running, it isn't saving anything.

Your form talks about labor dollars per year. We use dollars per hour times the estimated use of old and new equipment. If we wish to replace a machine used 1000 hours per year and the new machine will go one-third faster, the labor savings are 333 hours times the hourly rate.

Under machine operating costs, you do not mention floor space or electricity. Here there must be an adjustment fac-

(Please turn to page 12)



Squeezing scrap metal proves the "MUSCLE TOUGHNESS" OF U. S. RAINBOW V-BELTS

Many scrap metal dealers use the Dempster-Balester to bale sheet metal into easy-to-handle units. The tremendous power of the machine puts terrific shock loads on V-Belts —U. S. Rainbow® V-Belts. These muscular belts stand up under this treatment because they each have the unique Equa-Tensil Cord Section, a scientifically developed "U. S." construction that brings together in a balanced unit the concentrated strength of multiple pulling cords, distributes the load so evenly among the cords that each carries its full share of the load.

U. S. Rainbow V-Belts have greater gripping power, without slippage, because the straight sidewalls grip the grooves the full height of the belt. Every ounce of excess stretch is worked out mechanically before leaving the factory, yet the belt remains elastic enough to stand heavy shock loads.

U. S. Rainbow V-Belts are obtainable through any of our selected distributors, or any of United States Rubber Company's 27 strategically located District Sales Offices, or write address below.

A COMPLETE DRIVE SERVICE

MULTIPLE V-BELTS · F. H. P. V-BELTS · SHEAVES
FLAT BELTS AND BELTING · SPECIAL PURPOSE BELTS
POWERGRIP **"TIMING"® BELTS**

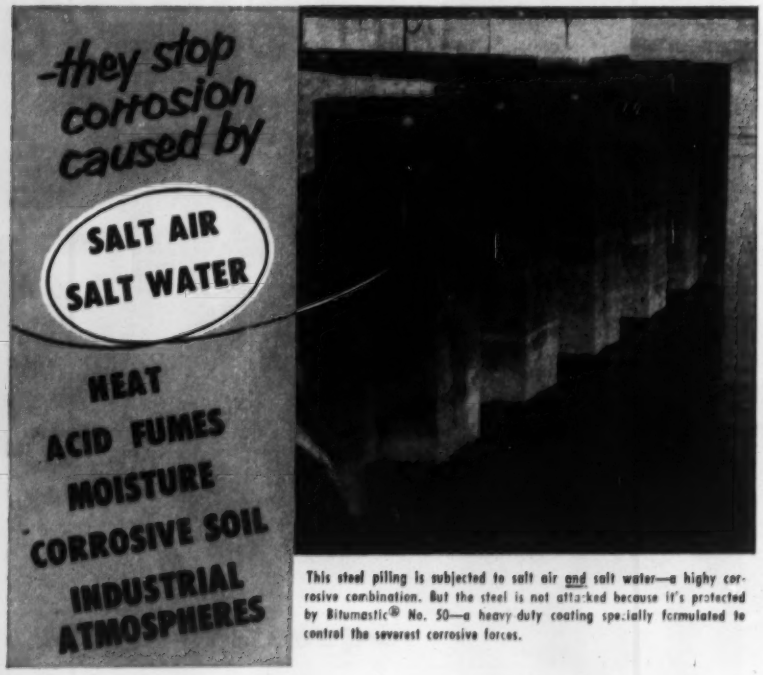
"U.S." Research perfects it
"U.S." Production builds it
U.S. Industry depends on it.

US RUBBER

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

You can solve your **tough** corrosion problems by using Bitumastic® Coatings



This steel piling is subjected to salt air and salt water—a highly corrosive combination. But the steel is not attacked because it's protected by Bitumastic® No. 50—a heavy-duty coating specially formulated to control the severest corrosive forces.

TOUGH CORROSION PROBLEMS can be solved, but not by using ordinary paints or conventional protective coatings. For long-term protection, it takes *specialized* protective coatings . . . the Bitumastic Coatings Koppers makes.

Bitumastic Protective Coatings are specially formulated from a tar-pitch base* that is, for all practical purposes, impervious to moisture. These coatings keep moisture away from exposed metal surfaces . . . and that's the *best* way to stop corrosion.

With tough, durable Bitumastic Protective Coatings, a thickness up to eight times that of ordinary paints can be obtained in one application. Where other factors are equal, the *thicker* the coating the *longer* the period of protection.

Send for a set of free booklets describing the family of Bitumastic Protective Coatings. At the same time, tell us about *your* corrosion problems so that we can suggest a satisfactory solution. There is no obligation, of course.

**Hi-Heat Gray is a non-coal-tar vehicle and metallic pigment.*

KOPPERS COMPANY, INC.

Tar Products Division, Dept. 778-T, Pittsburgh 19, Pennsylvania

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

MADE ONLY BY KOPPERS

BITUMASTIC PROTECTIVE COATINGS

SOLD THROUGH INDUSTRIAL DISTRIBUTORS

KOPPERS ®

LETTERS

(Concluded from page 10)

tor with two-thirds of the operating cost of the new machine turning out equivalent work to the candidate for replacement.

It seems to me re-equipping should tend to increase return on average plant investment. This gives a guide on proper return which MAPI omits. I also feel the bite of taxes should be considered.

In any case, I certainly congratulate you for a promising presentation and thought-provoking article on a not too systematized facet of business management.

Carter C. Higgins
President
Worcester Pressed Steel Co.
Worcester, Mass.

• *We agree with your point about idle machinery. The Guide user is asked to figure all charges as based on the job done, not on a flat rate of hours per year times wages and costs per hour. If a job can be run off in less than a full shift, charges are only for actual running time.*

To simplify the Guide, we left floor space and power requirements out of machine operating costs. However, in the instructions, we advise that "Under 'Others' include the cost of scrap, floor space, power requirements, etc."

Query on New Alloy

We are anxious to obtain opinions from responsible authorities on a new alloy known as Thermenol.

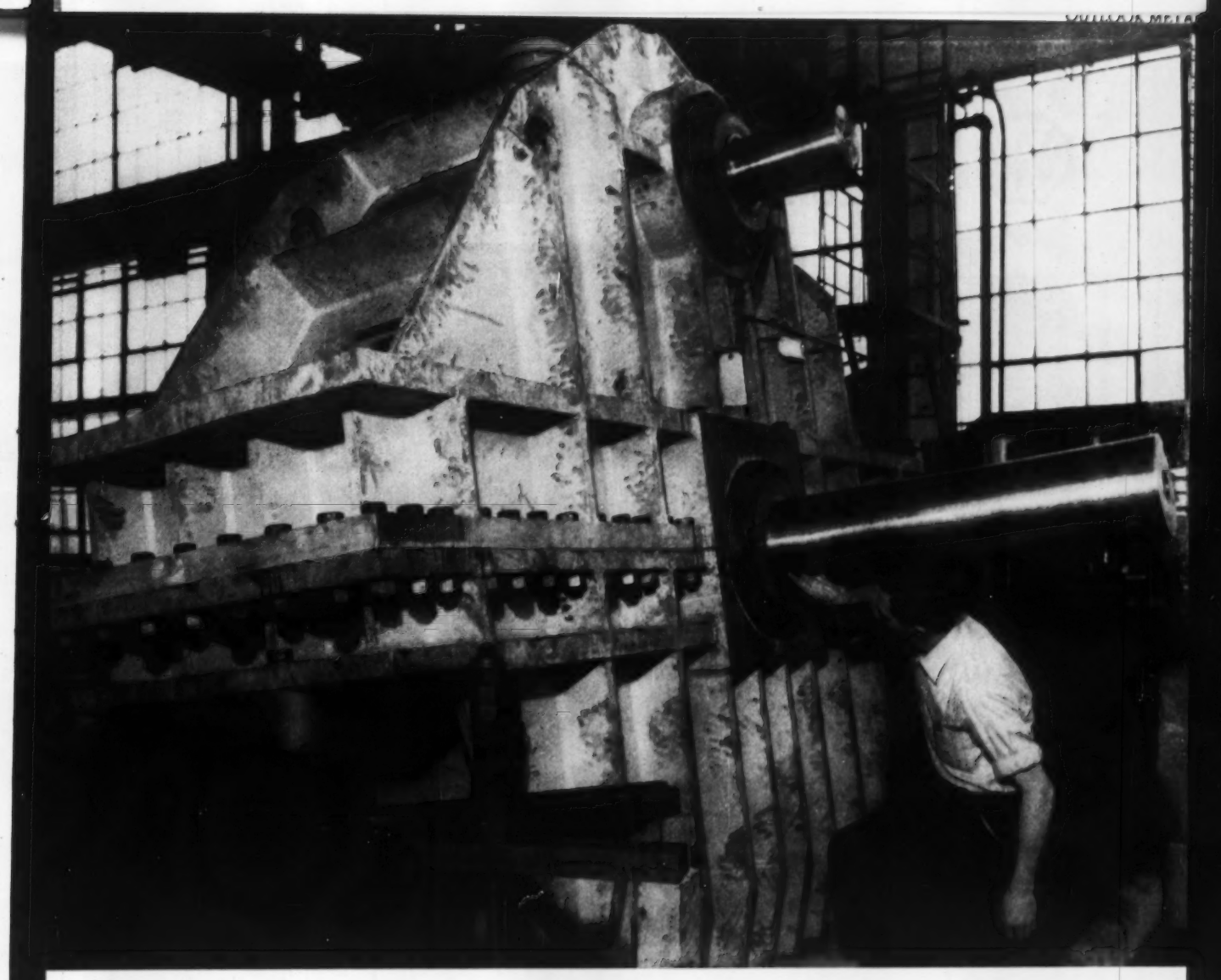
It is our understanding that this alloy, in effect, constitutes a new metal, and that its use has either been recommended or suggested by the strategic materials division of the U. S. Navy.

We are particularly interested in knowing the possibilities of Thermenol developing into a metal or alloy of large usage.

Julius G. Berens
Berens Organization Inc.
New York

• *There appears to be considerable commercial interest in this alloy, especially among stainless steel producers. However, we believe production is largely of an experimental nature. Full evaluation of the possibilities of any new alloy requires a tremendous amount of practical data and many tests.*

For background information on this Naval Ordnance developed alloy, we are forwarding tearsheets of a STEEL *story, "Big Future for Non-Strategic Hi-Temperature Alloy" (Aug. 2, 1954, page 88). It was also mentioned in the Technical Outlook column of May 9 (page 77) in the item, "Nonstrategic Alloy."*



Westinghouse Gearing Division improves speed reducer performance with SSW forged steel shafts

Two Standard Steel forged steel shafts are important components of this speed reduction unit required to drive a seamless tube piercing mill. Built and set up for tests by the Gearing Division of Westinghouse Electric Corporation, Pittsburgh, SSW shafts (output and input) were selected for their more uniform *internal structure and closely controlled analysis.* They know these inherent features will contribute to higher-quality . . . longer-lasting . . . failure-resisting performance.

Westinghouse also found this structural uniformity enabled them to machine finish on site the high-speed output shaft simply and easily.

You too can improve your product, get better over-all performance and operation by specifying and standardizing on Standard Steel forgings.

Dept. 8646, Standard Steel Works Division
Baldwin-Lima-Hamilton Corporation, Burnham, Pa.

Please send me new Standard Steel Works folder containing detailed information on "How forged weldless rings and flanges improve your product and cut your costs."

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

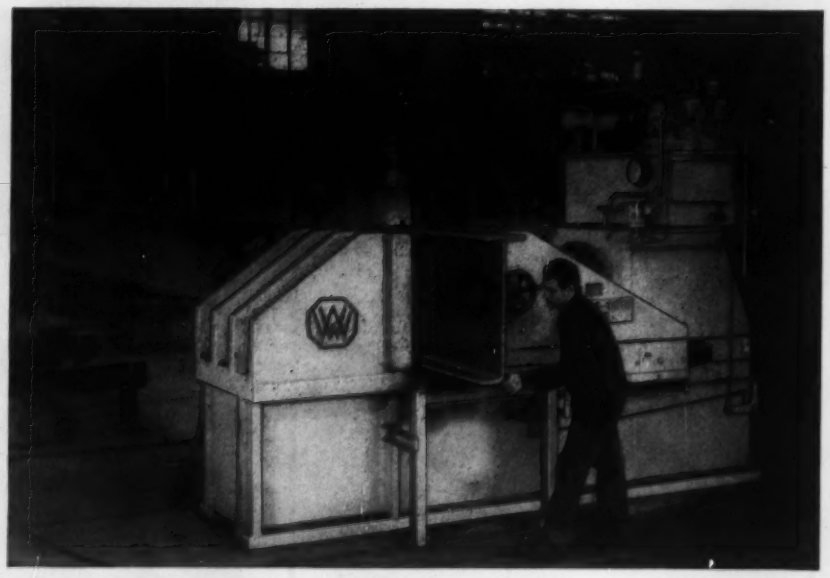
BALDWIN BLH LIMA-HAMILTON

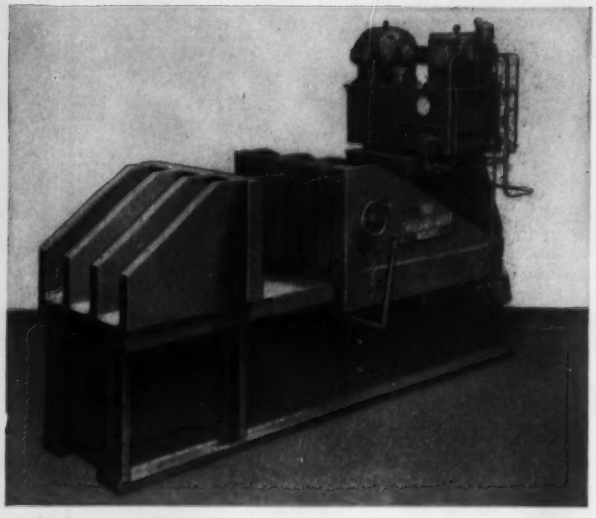
Standard Steel Works Division
BALDWIN-LIMA-HAMILTON

WILLIAMS-WHITE
Horizontal Bender and Straightener

The versatility of the horizontal press is well represented by the 200 Ton Hydraulic Bender and Straightener illustrated, in the installation view at right. The 30" x 48" crosshead and end lug make this an excellent machine for straightening I-beams, channels and other sections.

The forward travel of the crosshead is adjustable by the handwheel mounted on the side of the crosshead. In the event the stroke is not sufficient to complete the desired bending or straightening operation, the operator merely turns the handwheel and the crosshead continues forward a distance proportionate to the movement of the wheel.





WILLIAMS-WHITE & COMPANY machinery is custom built to your specifications! Our designers and engineers are at your service, without obligation, to help you select capacity and type of machine most suited for your requirements. For more information consult your WILLIAMS-WHITE & CO. representative or write us direct.

BUILDERS OF MACHINERY SINCE 1854

REPRESENTATIVES

FRANK RYMAN'S SONS
Pittsburgh, Pa.

A. L. BECHTEL & SON
Cleveland, Ohio

IRVING R. GARD & CO.
Seattle, Wash.

WILLIAMS-WHITE & CO.
Chicago Office:
J. E. Maynard, Mgr.
53 W. Jackson Blvd.

ALLIED NORTHWEST
MACHINE TOOL CORP.
Portland, Ore.

E. E. WOOD MACHINERY CO.
Detroit, Mich.

PAGEL MACHINERY COMPANY
Milwaukee, Wis.

SEIFREAT-ELSTAD MACHINERY CO.
Cincinnati, Columbus and
Dayton, Ohio

EDWARD A. LYNCH MACHINERY CO.
Wynnewood, Pa.

GEORGE A. DAVIES, Jr. MACHINERY CO.
Los Angeles, Calif.

WILLIAMS-WHITE & Co.

300 EIGHTH ST. • MOLINE, ILLINOIS • EST. 1854

New process gives more corrosion-proof chromium finish

◆ **Hard, wear-resistant Unichrome Crack-Free Chromium plated directly on steel stops rust . . . proves superior to ordinary chromium**

◆ **Improved non-galling, non-seizing finish achieved also with United Chromium's process**

Chromium can now be plated without the network of fine cracks which occur in thick ordinary chromium. United Chromium has developed a solution which yields Crack-Free Chromium Deposits.

SALT SPRAYED 100 HOURS — NO CORROSION

Splined steel shafts used in washing machines were plated directly with chromium and then salt-spray tested by the manufacturer. With .0005" of ordinary chromium, the corrosive penetrated the cracks and shaft surfaces were completely covered with rust in less than 100 hours. With .0005" of Unichrome Crack-Free Chromium, surfaces were unblemished after 100 hours.

LONGER LIFE FINISHING

Unichrome Crack-Free Chromium is a gray matte plate, but buffs readily for high luster. It does not depend on scarce nickel for long life.

In other ways, too, the new finish proves superior to ordinary chromium. One user increased life of chromium plated dies 20% by switching to the new process. Another was able to take faster and deeper grinding cuts in plated cams and end the service failures encountered with ordinary chromium.

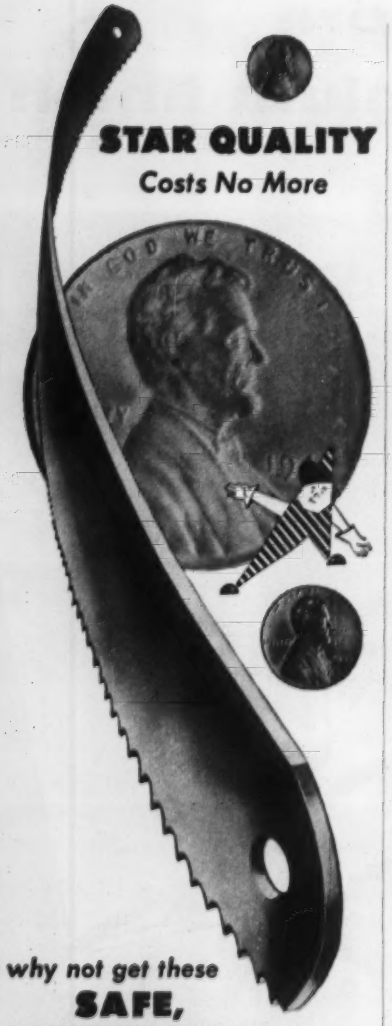
This is just one of many United Chromium developments in processes, equipment and materials which provide opportunities to cut your finishing costs . . . opportunities to turn out a better product through a better finish. We'd welcome the chance to work with you.

UNICHROME
Trade Mark

METALLIC and ORGANIC FINISHES...EQUIPMENT

UNITED CHROMIUM DIVISION
METAL & THERMIT CORPORATION

100 East 42nd Street, New York 17, N. Y.
Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif.
In Canada: United Chromium Limited, Toronto 1, Ont.



STAR QUALITY
Costs No More

why not get these
SAFE, UNBREAKABLE
high speed blades
from your STAR Distributor?

For over 75 years, industry has *known* STAR Hand and Power Hacksaw Blades as *quality* blades.

Here, as an example, is the STAR Unbreakable High Speed Steel Blade—safe, fast-cutting, long-lived. The STAR combination of a flexible steel back, special-process weld and high speed steel cutting edge adds up to an efficient, shatterproof, proved-quality blade.

STAR SERVICE COSTS NO MORE

Order any of the complete line of STAR Blades from your Industrial Distributor—your best source of supply for hundreds of the items you need to operate efficiently, economically, and without production interruptions. 1018

Sold Only Through Recognized Distributors

CLEMSON BROS., Inc.
MIDDLETOWN, N. Y., U.S.A.
Makers of Hand and Power Hack Saw Blades, Frames, Metal Cutting Band Saws and Clemson Hand and Power Lawn Mowers.

STEEL
The Metalworking Weekly

Editor, IRWIN H. SUCH
Managing Editor, WALTER J. CAMPBELL
Assistant Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEY ..... *Market Editor*
J. D. KNOX ..... *Steel Plant Editor*
HARRY CHANDLER ... *Copy Editor*
FRANK R. BRIGGS ..... *Associate Editor*
THOMAS F. HRUBY ..... *Associate Editor*
JAMES P. MORRISSEY ... *Associate Editor*
AUSTIN E. BRANT ..... *Assistant Editor*
MICHAEL A. L. WEBSTER ... *Assistant Editor*
BYRON E. KENNEL ..... *Assistant Editor*
MARY ALICE LYMAN ... *Assistant Editor*
JEAN MCNAMEE ..... *Editorial Assistant*
EILEEN CORTES ... *Editorial Assistant*
ALLEN G. GRAY ..... *Technical Editor*
ROBERT F. HUBER ... *Machine Tool Editor*
ROBERT O. JAYNES ..... *Associate Editor*
VAN CALDWELL ..... *Associate Editor*
STANLEY B. STEWART ..... *Assistant Editor*
HEINZ VON KOSCHEMBAHR ... *Assistant Editor*
MARY T. BORGERHOFF ..... *Assistant Editor*
MARY ANN STUVE ..... *Editorial Assistant*

Resident Editors

New York 17 ... 60 East 42nd St. B. K. PRICE, L. E. BROWNE, Murray Hill 2-2581
Chicago 11 ... 520 North Michigan Ave. ERLE F. ROSS, WILLIAM E. DEAN, Whitehall 4-1234
Pittsburgh 19 ... 2837 Koppers Bldg. ROBERT M. LOVE, Atlantic 1-3211
Detroit 26 ... 1249 Washington Blvd. FLOYD G. LAWRENCE, Woodward 3-3488
Washington 4 ... 1123 National Press Bldg. E. C. KREUTZBERG, Executive 3-6849
London, 2 Caxton St., Westminster S. W. 1 VINCENT DELPORT, *European Editor*

Editorial Correspondents

Birmingham ... R. W. KINCEY, Birmingham 3-1121
Buffalo ... L. G. FELDMANN, Cleveland 5353
St. Louis ... MAC L. HUTCHENS, Republic 7752
Youngstown ... GEORGE R. REISS, Riverside 7-1471
Los Angeles ... NORMAN LYNN, Webster 5-3040
San Francisco ... EDWIN HAVERTY, Yukon 6-5151
Seattle ... R. C. HILL, Melrose 1895
Cincinnati ... JACK DUDLEY, Beechmont 7598
Toronto, Canada ... F. S. TOBIN, Empire 4-9655
Birmingham, England ... J. A. HORTON
Paris, France ... LEON JAUDOIN-PROM
Liege, Belgium ... JACQUES FOULON
Dusseldorf, Germany ... DR. HERBERT GROSS

BUSINESS STAFF

Advertising Director ... H. G. ROWLAND
Advertising Service Mgr. ... DORIS ROBBINS
Production Manager ... A. V. ANDERSON
Circulation & Promotion Dir. ... S. F. MARINO
Circulation Manager ... G. R. EBERSOLE
Marketing Director ... D. C. KIEFER
Market Research Dir. ... N. R. LADABOUCHE
Direct Mail Service ... AMY LOMBARDO
Reprints ... JUNE SCHILENS
Classified Advertising ... BETTY MARKWORTH

Advertising Representatives

New York 17 ... 60 East 42nd St. K. A. ZOLLNER, GUY LABAW, Murray Hill 2-2581
Philadelphia ... 200 Wynnewood Ave. Wynnewood, Pa. WM. J. VERSCHOOR, Midway 2-6512
Farmington, Conn. ... 12 Farmstead Lane CALVIN FISHER JR., Orchard 7-1756
Pittsburgh 19 ... 2837 Koppers Bldg. J. C. SULLIVAN, Atlantic 1-3211
Cleveland 13 ... Penton Building J. K. GILLAM, WM. J. D'ALEXANDER, Main 1-8260
Cincinnati 6 ... 2215 Victory Pky. E. L. FRANKE—Parkway 1-3640
Detroit 26 ... 1249 Washington Blvd. C. A. TALLINGER JR.—Woodward 3-3488
Chicago 11 ... 520 North Michigan Ave. L. C. PELOTT, W. L. POLAND, JOHN W. VAUGHAN, Whitehall 4-1234
Los Angeles 48 ... 6262 Commodore Sloat Dr. F. J. FULLER—Webster 1-6865
San Francisco 4 ... 57 Post St. F. J. FULLER, Robert W. Walker Co., Sutter 1-5568
Griffin, Georgia ... 331 South 12th St. FRED J. ALLEN—Griffin 7854

BPA

Published Every Monday by
THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio
MAin 1-8260

G. O. HAYS ... *President and Treasurer*
R. C. JAENKE ... *Executive Vice President*
F. G. STEINEBACH ... *Vice President and Secretary*
F. O. RICE ... *Vice President*
J. P. LIPKA ... *Asst. Secy. and Asst. Treas.*

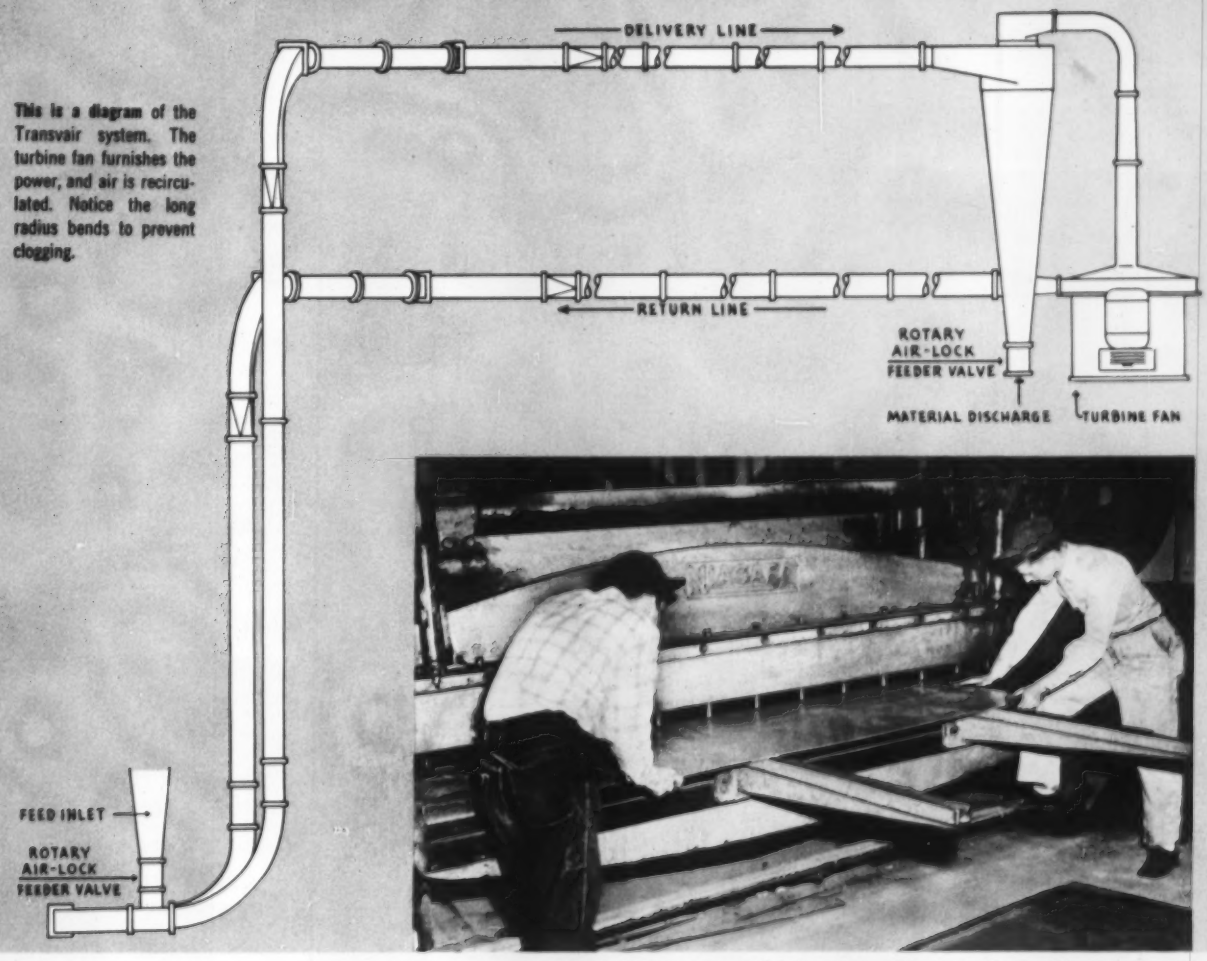
NBP

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION

Member of Business Publications Audit of Circulation Inc., Society of Business Magazine Editors and National Business Publications Inc.

How Stainless Steel prevents contamination in pneumatic transfer system

This is a diagram of the Transvair system. The turbine fan furnishes the power, and air is recirculated. Notice the long radius bends to prevent clogging.



Stainless Steel presents no fabricating problems at Young Machinery Company. This standard shear, for example, is used to cut both ¼" carbon steel and 10-gauge Stainless Steel.

Young Machinery Company makes a unique line of air conveyors that transfer dry, free-flowing materials through tubing. Energy is furnished by a turbine fan, and the entire system is sealed so that hazardous and toxic substances can be handled with safety.

Since contamination is a problem, the systems are frequently made from Stainless Steel. The first time that Young used this metal was in 1949, but now it accounts for 50% of their total production.

These systems are frequently used to move corrosive solids in the chemical industry – a natural use for Stainless Steel. Then, too, foodstuffs are often handled; and the dense, easy-to-clean surface of Stainless Steel is unmatched for this service.

There have been no production difficulties. Identical equipment is used for fabrication of Stainless Steel or carbon steel. In fact, it was not necessary to buy new equipment or even modify the older machinery when Stainless Steel was used.

No other metal combines the easy fabrication, corrosion resistance, high strength and cleanliness of Stainless Steel. If you plan to use this durable metal, remember that United States Steel has the nation's largest assortment of Stainless Steel shapes, sizes, types and finishes.

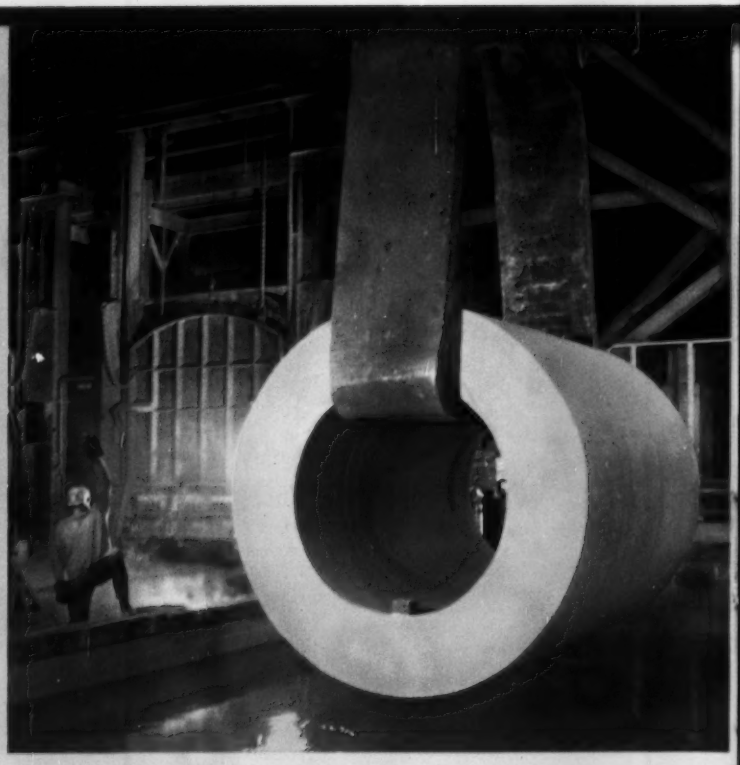
UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL

Here, one of the cylinders is being forged on the 7,000-ton press. Masterful work on the mandrel and precision manipulation of the press provide proper thickness/diameter ratio.



The cylinder (largest of its kind ever forged) is about to be lowered into the water quench tank after heat treating.

GE gets ready to make some big crashes

General Electric's Large Steam Turbine-Generator Department recently installed a high-speed burst pit to investigate the bursting characteristics of wheels and rotors. Model forged turbine and generator shafts and other partial and full scale parts will be spun at speeds up to 25,000 rpm or until they burst.

The big burst pit includes two concentric forged steel cylinders, made by the Homestead Forgings Division of U. S. Steel. These 60-ton cylinders must possess a strength that almost defies description because tremendous forces are at work here.

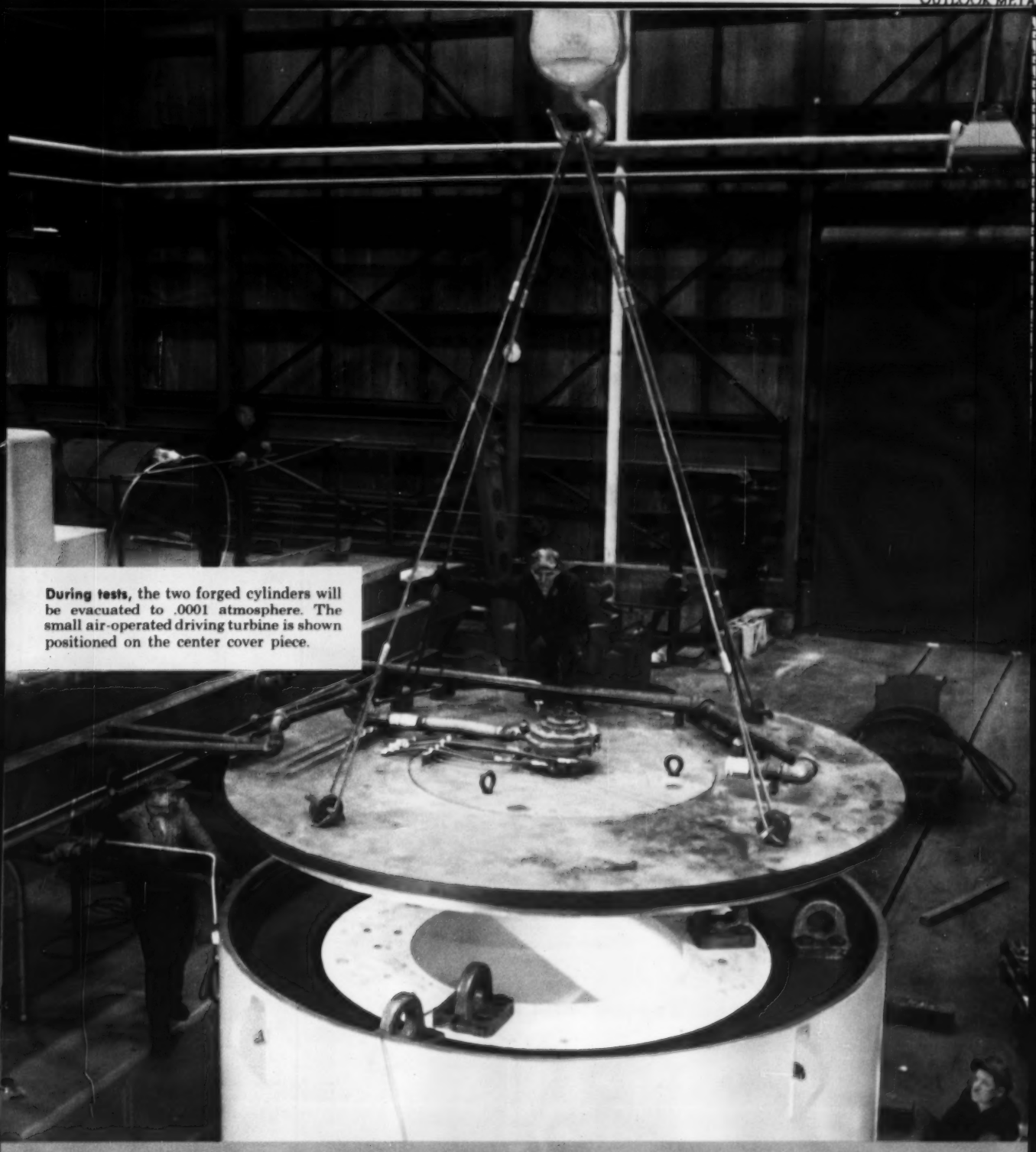
Imagine 200 automobiles traveling 100 mph crashing simultaneously. These U. S. Steel Quality Forgings have been designed to absorb that same amount of energy (200 *million* foot pounds).

With this testing facility, General Electric engineers expect to learn new things about material strength and rotor design which will permit building ever-better turbine-generator units to keep up with the demand for low-cost electric power.

U. S. Steel's Homestead Forgings Division produces a complete range of high-quality forgings, including turbine-generator shafts, heavy machinery parts, and giant sleeves like GE is using in this burst pit. We solicit your inquiries or requests for our free booklet on USS Quality Forgings. Just write to United States Steel, 525 William Penn Place, Room 4799, Pittsburgh 30, Pa.

SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

UNITED STATES STEEL

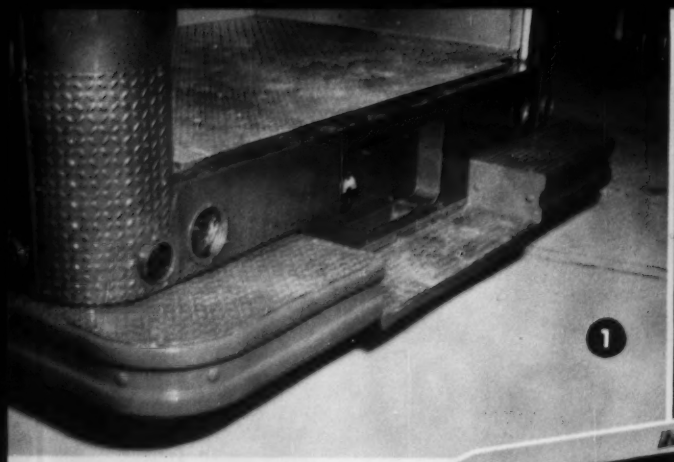


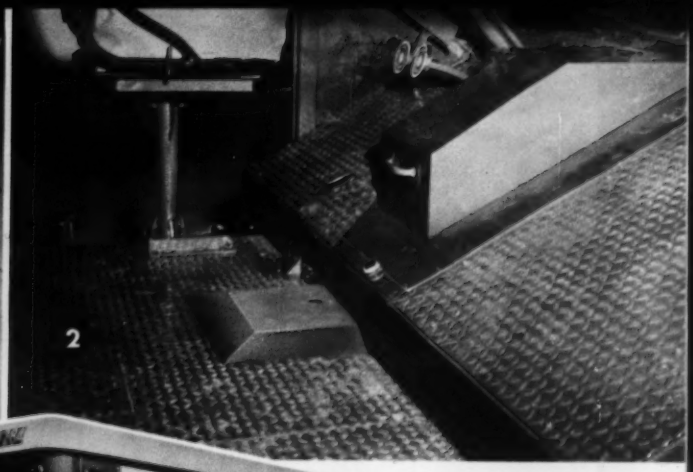
During tests, the two forged cylinders will be evacuated to .0001 atmosphere. The small air-operated driving turbine is shown positioned on the center cover piece.

USS

Quality FORGINGS

- heavy machinery parts—carbon, alloy, stainless
- forged steel rolls and back-up roll sleeves
- electrical and water wheel shafts
- hammer bases and columns





1. **"SAFE-TREAD" MULTIGRIP** makes tough flooring and steps that won't chip, crack or splinter. Note structural use of Multigrip on rear corners.

2. **USS MULTIGRIP** Floor Plate was used on cab floors to insure safe footing and longer life.

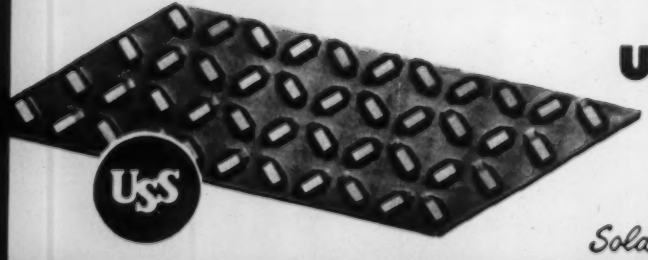
3. **IN ADDITION, USS COR-TEN** High Strength Steel used in floor and side supports, gave added strength with no increase in weight.

1250 Railway Express trucks *safe-treaded* by York-Hoover with Multigrip

A busy Railway Express driver needs safe, sure footing every time he steps into or out of his truck. It was for this reason that the York-Hoover Corporation, manufacturers of truck bodies, used USS Multigrip "safe-tread" Floor Plate on the cab floors, body floors and steps of 1250 new Railway Express trucks. Multigrip was used on the rear corners of the trucks to help prevent damage caused by backing into loading docks.

Not only in trucks like this, but in plants and factories of every kind, proper flooring can do much to eliminate accidents and add to safety. Multigrip Floor Plate has symmetrically raised sections that are flat-topped to provide safe, comfortable footing. They won't chip, crack or splinter on your plant floors, aisles and stairs. Multigrip is easier to clean, too. Available in large sections that are easily cut and shaped. It cuts down waste. It's built tougher to last longer, even in heavy traffic areas. Increase plant safety and minimize maintenance problems by using Multigrip "safe-tread" Floor Plate.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, CHICAGO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

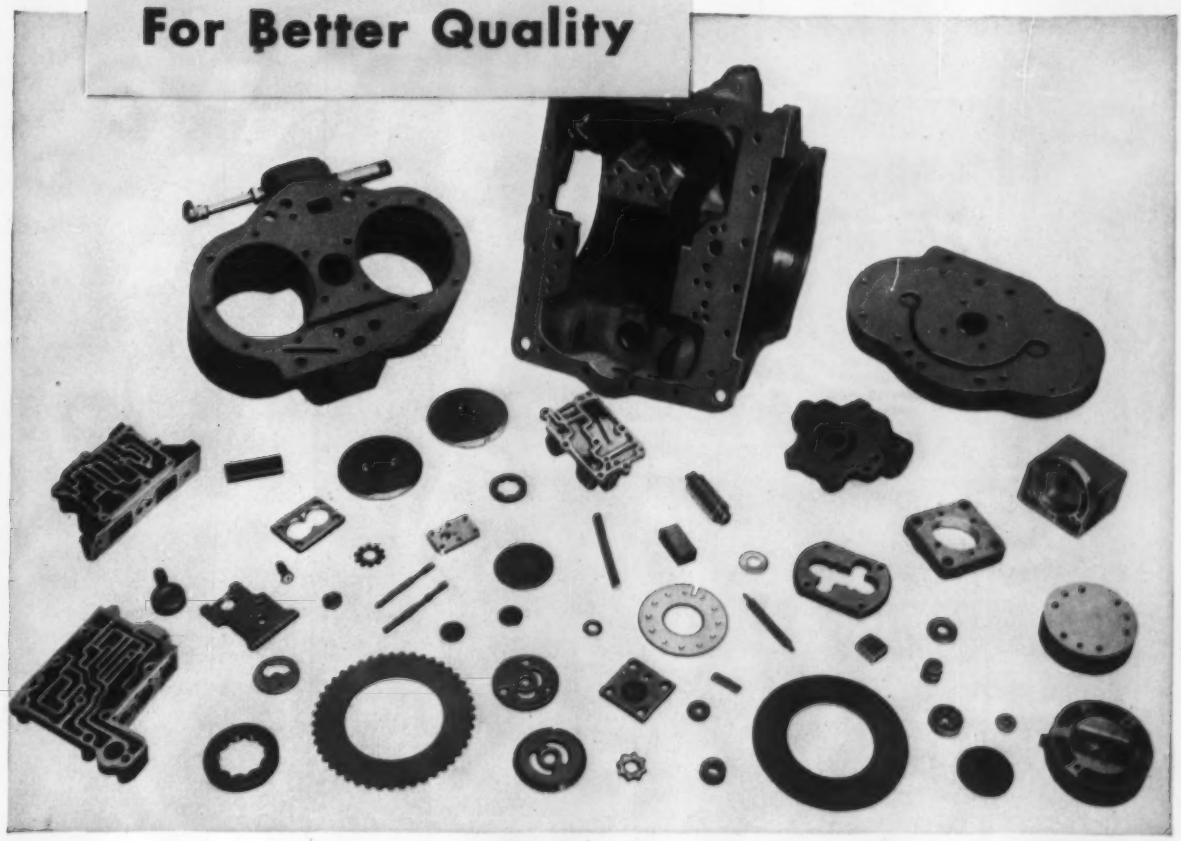


USS multigrip FLOOR PLATE

Sold by leading distributors from coast to coast

UNITED STATES STEEL

For Better Quality



Your product parts will perform better — and gain in value — when a product-improving finish is added in Norton's new Job Lapping Department

An enlarged job lapping service

Now you can improve your product quality with precision lapped parts!

The new Norton Job Lapping Service is ready to help you improve product quality and performance — by furnishing parts to your exact specifications.

Complete and modern in every detail, the new department is manned by expert personnel, operating Norton machines for every type of lapping. Results are checked on the latest electrical and optical inspection equipment, while precision accuracy is further assured by careful atmosphere control. The scope of jobs that can be handled is broad, covering:

Materials — Practically unlimited in range, including hardened steel, stainless steels, stellite facings, cast iron, nonferrous pressed and die-cast parts.

Types of Lapping — Single and parallel face flat lapping, to specifications ranging from stock removal to optical flatness. Also, external cylindrical lapping to high precision requirements.

Workpiece Capacities — Flat work up to 24″ across. Cylindrical work from 1/16″ diameter by 1/2″ long to 2″ diameter by 8″ long.

Meeting Your Needs Exactly — The entire project is under direct supervision of Norton Lapping Engineers, pioneers in the development of mechanical lapping processes and machines. They are prepared to work out the best lapping techniques for your requirements. For full details, see your Norton Representative or write us direct. NORTON COMPANY, Machine Division, Worcester 6, Mass.

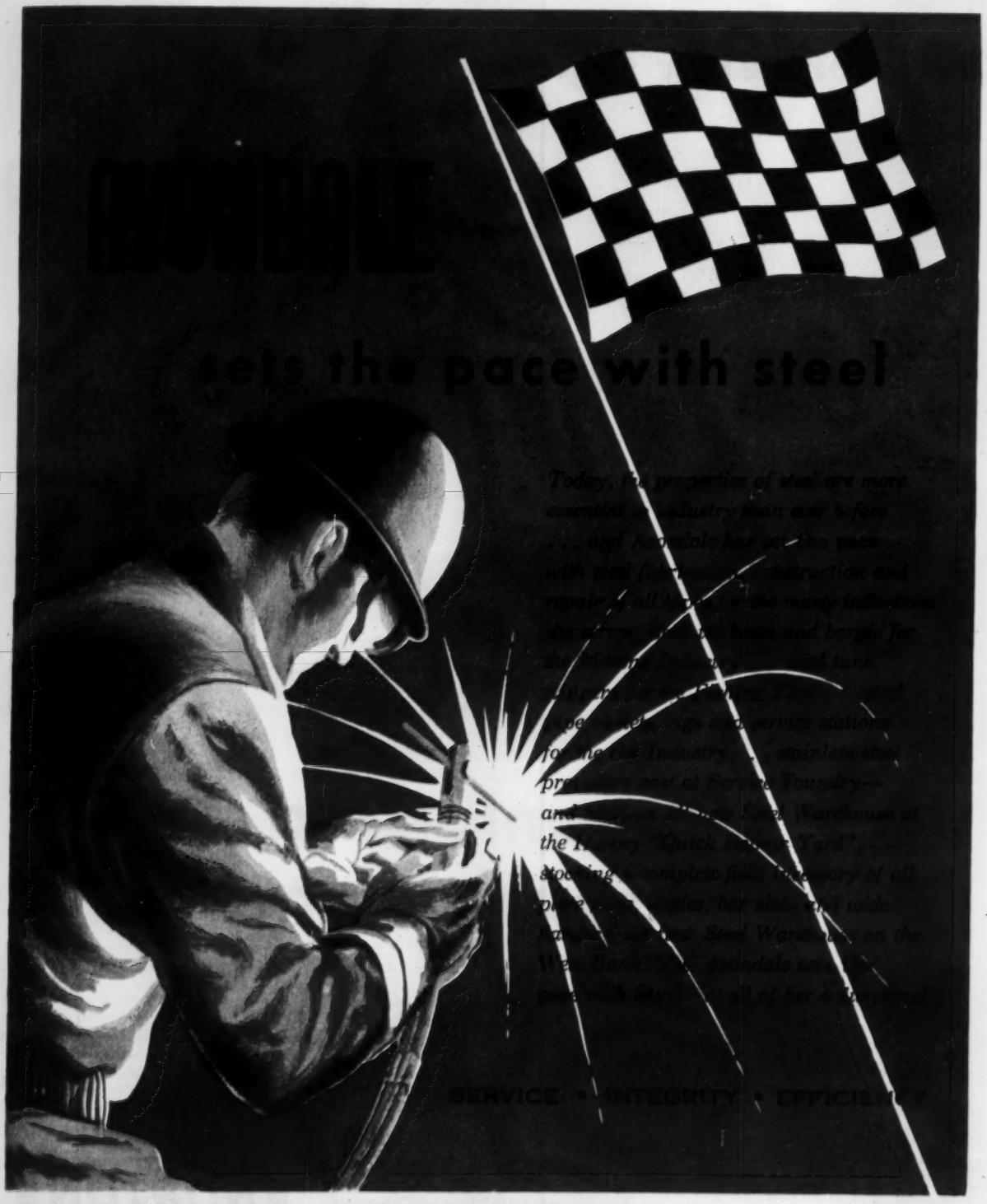
To Economize, Modernize With NEW

NORTON

GRINDERS and LAPPERS

Making better products... to make other products better

District Sales Offices: Hartford • New York • Cleveland • Chicago • Detroit • In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

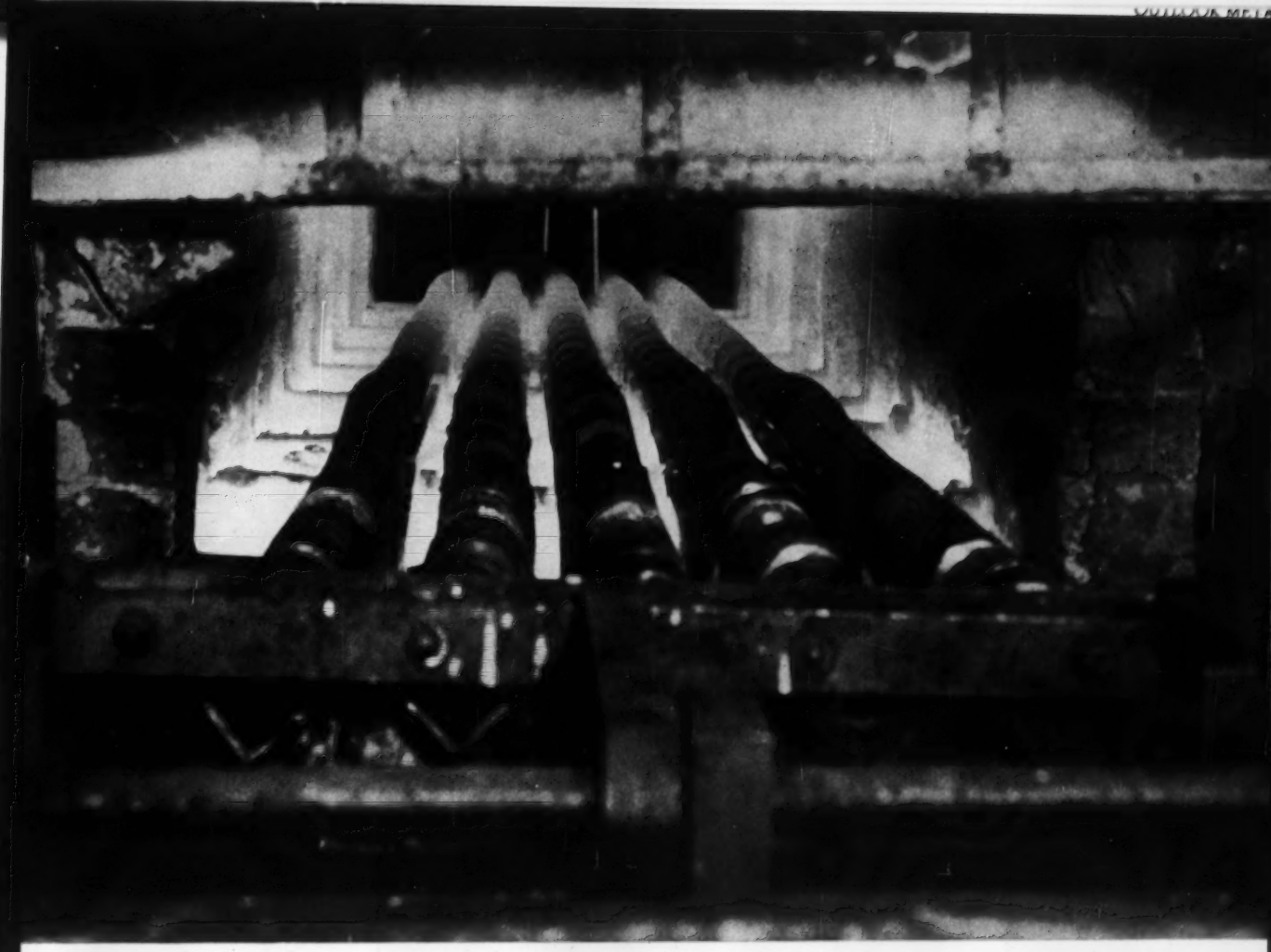


SHIP BUILDING • SHIP REPAIRING • FOUNDERS • PROPELLERS • STRUCTURAL STEEL

AVONDALE MARINE WAYS, INC.

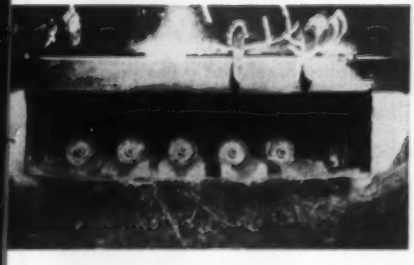
CABLE ADDRESS "AVONWAYS"

P. O. BOX 1030 • PHONE UNiversity 4561 • NEW ORLEANS 8, U. S. A.



Service that ruins stainless steel rails in 2 to 3 months leaves...

CARBOFRAX® SKIDS UNTOUCHED AFTER TWO YEARS



After two years, here's how the trough-shaped CARBOFRAX skids look—practically untouched by the thousands of steel blanks that have slid over them.

CARBOFRAX silicon carbide skid rails have already outlasted stainless steel rails 8 to 12 times in this pusher-type heating furnace...and are still in service! The side-fired gas-burning furnace is used by J. W. REX COMPANY, LANSDALE, PA., to heat 13-pound circular steel blanks to 1590°F at a rate of 115 blanks an hour.

The stainless steel skids the Rex Company used before failed regularly every two to three months, while frequent shutdowns to straighten or replace the rails ran up operating costs and curtailed output.

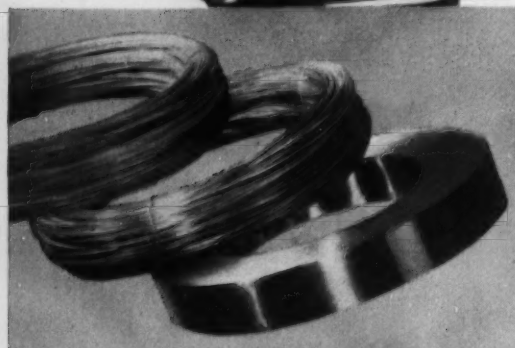
Silicon carbide's hot strength and resistance to wear at the operating temperature have completely eliminated these shutdowns...there hasn't been one since the CARBOFRAX rails were installed in May, 1952. And the heat conductivity of the trough-shaped CARBOFRAX skids assures that the blanks get uniform heating.

CARBOFRAX skids don't just outlast other skids. *Their first cost is usually lower than that of either water-cooled pipe or of those made of special heat-resisting alloys.* Why not get full information about CARBOFRAX skids right now, before your present ones wear out? Address Department 775, Refractories Division, The Carborundum Company, Perth Amboy, N. J.

CARBORUNDUM

Registered Trade Mark

. . . offers these advanced special-purpose super refractories: silicon carbide • fused aluminum oxide • electric furnace mullite • stabilized zirconia • boron nitride • boron carbide • zirconium boride • titanium boride • chromium boride • molybdenum boride • nickel aluminide



Follow Through IS IMPORTANT

From the time master craftsmen make the basic raw material in our own Steel Mill until Washburn Wire and Strip is ready for shipment to our customers, specifications for uniformity in all respects are rigidly followed . . . at various stages a percentage of each operation is examined microscopically.

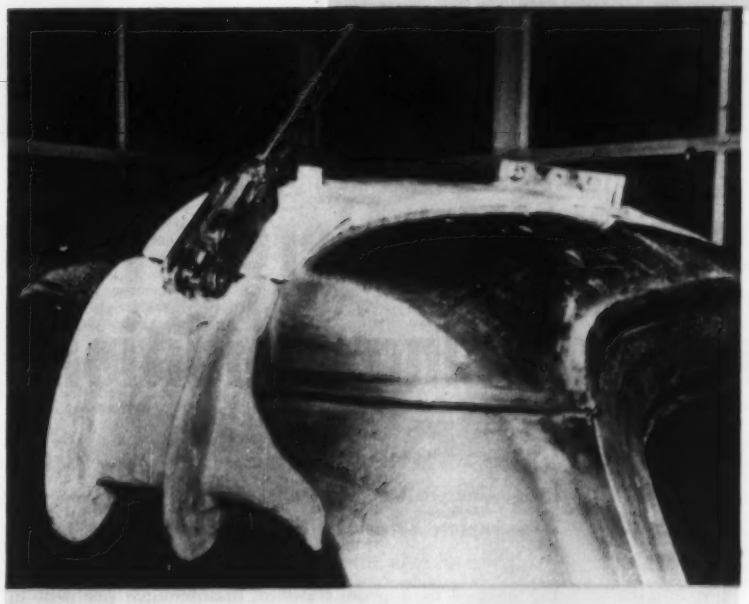
It's this STRICT FOLLOW THROUGH that produces WASHBURN Steel . . . Top Quality Steel that gives your products the advantage of today's advancing standards. If Strip, rectangular, round and flat rods, tempered and untempered flat and round high carbon wires fit into your picture, write for information on any application you have in mind.

WASHBURN WIRE COMPANY, NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

Tooling time cut 50% with compounds based on BAKELITE TRADE-MARK Epoxy Resins



REZOLIN *Toolplastik* Compound was cast against a finished body to form this spot welding jig. Time: only 21 hours compared with 45 to 80 needed to make one of conventional materials. Based on BAKELITE Epoxy Resin, this tooling compound is produced by **Rezolin, Inc., Los Angeles 45, Calif.**

Now metalworking tools can keep up with fast model changes. Less time, lower costs result because BAKELITE Brand Epoxy Resins offer these advantages:

- **Liquid compounds—can be cast to shape without pressure**
- **Cured at room temperature—no applied heat**
- **Minimum shrinkage—minimum finishing**
- **Excellent flexural, compression, and impact strengths**
- **Outstanding dimensional stability**
- **Light weight means easy handling**
- **Laminated with glass cloth to form jigs, spotting racks, fixtures, and Keller models.**

For further information, write Dept. JU-172.

BAKELITE BRAND
Epoxy Resins for Tooling

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.
In Canada: Bakelite Company, Division of Union Carbide Canada Limited, Belleville, Ontario
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

No More Scaling Here.....
Despite Severe Oxidizing Conditions

A vibrating chute made of a HAYNES high-temperature alloy solved a tough maintenance problem in this heat-treating furnace. The chute spans the entrance to the furnace and is subjected to severe oxidizing conditions. Other chutes became loaded with heavy scale in a few months' time and had to be repaired or replaced. Now that the chute is made of a HAYNES high-temperature alloy, there is no more scale. Parts keep flowing along freely, rejections are way down, and maintenance has been practically eliminated.

There are 11 HAYNES high-temperature alloys. All have excellent strength at elevated temperatures, good creep and stress-rupture properties, and are extremely resistant to oxidizing or reducing atmospheres. One of them may be the answer to a production or maintenance problem in your plant.

For information on prices, sizes, and properties of these alloys, write to our general sales office in Kokomo, Indiana, or to any of the district sales offices listed below.

HAYNES TRADE-MARK ALLOYS

HAYNES STELLITE COMPANY

A Division of Union Carbide and Carbon Corporation

UCC

General Offices and Works, Kokomo, Indiana

Sales Offices

Chicago · Cleveland · Detroit · Houston · Los Angeles · New York · San Francisco · Tulsa

"Haynes" is a registered trade-mark of Union Carbide and Carbon Corporation.

CALENDAR
OF MEETINGS

Aug. 15-17, Society of Automotive Engineers Inc.: West coast meeting, Multnomah hotel, Portland, Oreg. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

Aug. 22-23, Stanford Research Institute and National Industrial Conference Board: Symposium on electronics in automatic production, Sheraton-Palace hotel, San Francisco. Information: National Industrial Conference Board, 247 Park Ave., New York 17, N. Y. Secretary: Herbert Briggs.

Aug. 24-26, West Coast Electronic Manufacturers Association: Western electronic show and convention, Civic Auditorium, San Francisco. Information: WESCON, 344 N. LaBrea Ave., Los Angeles 36, Calif.

Aug. 28-Sept. 1, National Association of Furniture Manufacturers: Furniture supply fair, Conrad Hilton hotel, Chicago. Association's address: 666 Lake Shore Dr., Chicago 11, Ill. Secretary: John M. Snow.

Aug. 31-Sept. 26, World's Fair of Power: S. Lake Shore Dr. adjacent to Soldiers Field, Chicago. Sponsor: General Motors Corp., General Motors Bldg., Detroit 2, Mich.

Sept. 5-6, American Machine Tool Distributors Association: Annual meeting and show, Blackstone hotel, Chicago. Association's address: 1900 Arch St., Philadelphia 6, Pa. Secretary: Thomas A. Fernley Jr.

Sept. 6-8, Industrial Truck Association: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: William Van C. Brandt.

Sept. 6-8, Material Handling Institute Inc.: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

Sept. 6-17, Metalworking Machinery & Equipment Exposition: Coliseum, Chicago. Information: Exhibition & Convention Management Inc., 2689 E. Overlook Rd., Cleveland 6, O. General Manager: C. L. Wells.

Sept. 6-17, National Machine Tool Show: International Amphitheatre, Chicago. Sponsor: National Machine Tool Builders Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Sept. 6-17, Production Engineering Show: Navy Pier, Chicago. Sponsor: National Machine Tool Builders' Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Sept. 9-11, Metal Powder Association: Fall closed meeting, the Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: Robert L. Ziegfeld.

Sept. 11-14, National Metal Trades Association: Eastern plant management conference, Essex and Sussex hotels, Spring Lake, N. J. Association's address: 122 S. Michigan Ave., Chicago 3, Ill. Secretary: C. L. Blatchford.

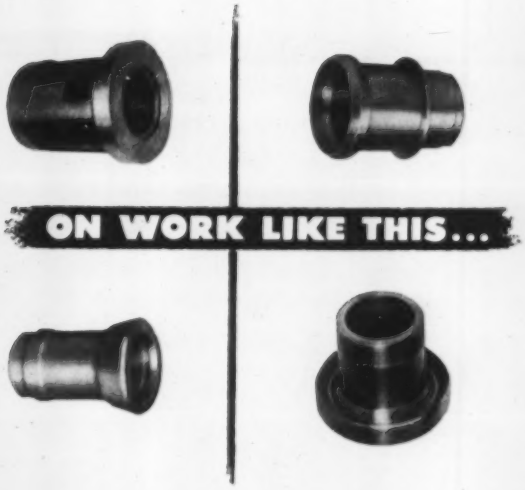
Sept. 11-16, American Chemical Society: Fall meeting, University of Minnesota, Minneapolis. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 12-14, American Road Builders Association: Annual conference of county engineers and officials, New Riverside hotel, Gatlinburg, Tenn. Association's address: World Center Bldg., Washington 6, D. C. Secretary: Eugene Reybold.

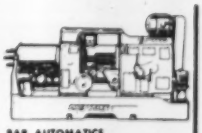
Sept. 12-14, Allied Railway Supply Association: Annual meeting and exhibit, Sherman hotel, Chicago. Association's address: P.O. Box 5522, Chicago, Ill. Secretary: Charles F. Weil.

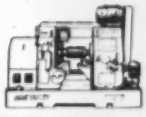
Sept. 12-15, Automotive Electric Association: Fall meeting, the Homestead, Hot Springs, Va. Association's address: 16223 Meyers Ave., Detroit 35, Mich. Secretary: S. W. Potter.

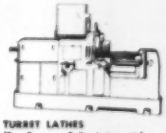
Sept. 12-15, Society of Automotive Engineers Inc.: Tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

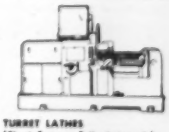


pennies are important...and seconds cannot be ignored


BAR AUTOMATICS
4 Spindle — 7 sizes, 1 to 7½"
6 Spindle — 9 sizes, ⅝ to 6"
8 Spindle — 6 sizes, ⅛ to 4"


CHUCKING AUTOMATICS
4 Spindle — 2 sizes, 10 and 12"
6 Spindle — 4 sizes, 3½ to 12"
8 Spindle — 2 sizes, 6 and 8"


TURRET LATHES
(Bar-Type — Fully Automatic)
Single Spindle — 3 sizes, 2½ to 8½


TURRET LATHES
(Chuck-Type — Fully Automatic)
Single Spindle — to 12" cap.

CHUCKING AUTOMATIC
Single Spindle ("Chuckmatic")
To 12" capacity

It is no mere coincidence that in the automatic departments of shops where production costs are watched most carefully, you will find a predominance of Acme-Gridley multiple and single spindle machines. This is the result of thorough, fact-finding job analyses in consultation with National Acme engineers. Each analysis is aimed at achieving the lowest cost per piece—whether by saving a fraction of a second in machine cycle time; by reducing the number of "second operation" handlings and machines, or by securing faster production of perfect parts.

Each analysis determines the economies of the particular job on its own merits—points to the right method and the right machine. And, because National Acme builds THE COMPLETE LINE of multiple- and single-spindle bar and chucking automatics (and is the only single source in the world that does), our engineers can recommend, without bias, the RIGHT machine.

It's easy to get this engineering experience to help with *your* job analyses. Just let us know when you are ready to talk it over—no obligation, of course.

THE NATIONAL ACME COMPANY
170 East 131st Street, Cleveland 8, Ohio

OUR JOB: TO PROVIDE THE RIGHT MACHINE FOR YOUR JOB!

See us at the Machine Tool Show Sept. 6 through 17. Booths 324 and 705

Wherever you look AT THE MACHINE TOOL SHOW YOU'LL FIND

BLISS
E. W. Bliss Company
BOOTH #1414

BRYANT
Bryant Chucking Grinder Company — BOOTH #1015

CMC CLEARING USI
Clearing Machine Corp.
BOOTH #716

CLEVELAND
The Cleveland Automatic Machine Co. — BOOTH #412

CONSOLIDATED MACHINE TOOLS
Consolidated Machine Tool Co. — BOOTH #217

EDLUND
Edlund Machine Co.
BOOTH #115

famco
Famco Machine Company
BOOTH #507

FEDERAL PRESS
Federal Press Company
BOOTH #801

FOSDICK
The Fosdick Machine Tool Co.
BOOTH #1402

FOX
Fox Engineering Company
BOOTH #419

GALLMEYER & LIVINGSTON
Gallmeyer & Livingston Company — BOOTH #906

GREAVES
Greaves Machine Tool Co.
BOOTH #721

speeds installation of any machinery
protects accuracy of precision machines

These machine tool builders cut set-up time at the Machine Tool Show from hours to minutes with BARRYMOUNT® Leveling Isolators. No drilling floors, no setting lag bolts, no shimming — they just set their machines on the Barry mounts, adjusted the leveling screws, and the normally tedious, costly job was done.

This is not just a show trick — it's a standard efficiency procedure for new installations and re-installations in large and small plants all over the country. And, *at the show or in your plant,* the isolation built into Barry mounts protects precision machines against vibration from nearby heavy equipment.

Visit us at Booth 153, Production Engineering Show, and a Barry engineer will show you how *you* can simplify installation, protect machine accuracy, prolong machine life, and cut maintenance costs with Barry Machine Mounts.

BARRY CONTROLS
INCORPORATED
926 PLEASANT STREET WATERTOWN 72, MASS.
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

JOHNSON
Johnston Machine & Press Corp.— BOOTH #411

KINGSBURY
Kingsbury Machine Tool Corp.
BOOTH #915

PRECISION PRODUCTION THROUGH MICRONIZING
MICRO MATIC
Micromatic Hone Corporation
BOOTH #1211

MOLINE
Moline Tool Company
BOOTH #1304

Monarch TURNING MACHINES
The Monarch Machine Tool Co.
BOOTH #920

THE MOTCH & MERRYWEATHER MACHINERY CO
The Motch & Merryweather Machinery Co.—BOOTH #606

Onsrud
Onsrud Machine Works Inc.
BOOTH #812

RACINE
Racine Hydraulics & Machinery Inc.
BOOTH #102

SHEFFIELD
The Sheffield Corporation
BOOTH #1305

Van Norman
Van Norman Company
BOOTH #905

WIEDEMANN
Wiedemann Machine Co.
BOOTH #1420

This is the cell room in ELECTROMET's new electrolytic manganese plant at Marietta, Ohio.

Now Available! "ELECTROMET" Trade-Mark ELECTROLYTIC MANGANESE 99.9% pure

For all uses where a high-purity manganese is required...

ELECTROMET's process for making electrolytic manganese produces high-purity metal with a minimum of 99.9 per cent manganese. This material is well suited for all uses where high-purity manganese is required, as in the production of low-carbon stainless steels, high-temperature alloys, non-ferrous alloys, and electrical resistance alloys.

Nitrogen-Bearing Electrolytic Manganese — A nitrided electrolytic manganese, containing about 6 per cent nitrogen and 93 per cent manganese, is also available for metallurgical uses from ELECTROMET.

Specifications of ELECTROMET Electrolytic Manganese

Analysis: Manganese 99.9% min. (on metallic basis)

Nitrogen-bearing Grade – approx. 93% manganese
approx. 6% nitrogen

Dehydrogenated material is available.

Packaging: Usually packed in steel drums holding 500 lb. of material. Smaller packages available at small premium.

For further information about ELECTROMET electrolytic manganese metal, and other ELECTROMET ferroalloys and metals, please contact the nearest ELECTROMET office listed below.

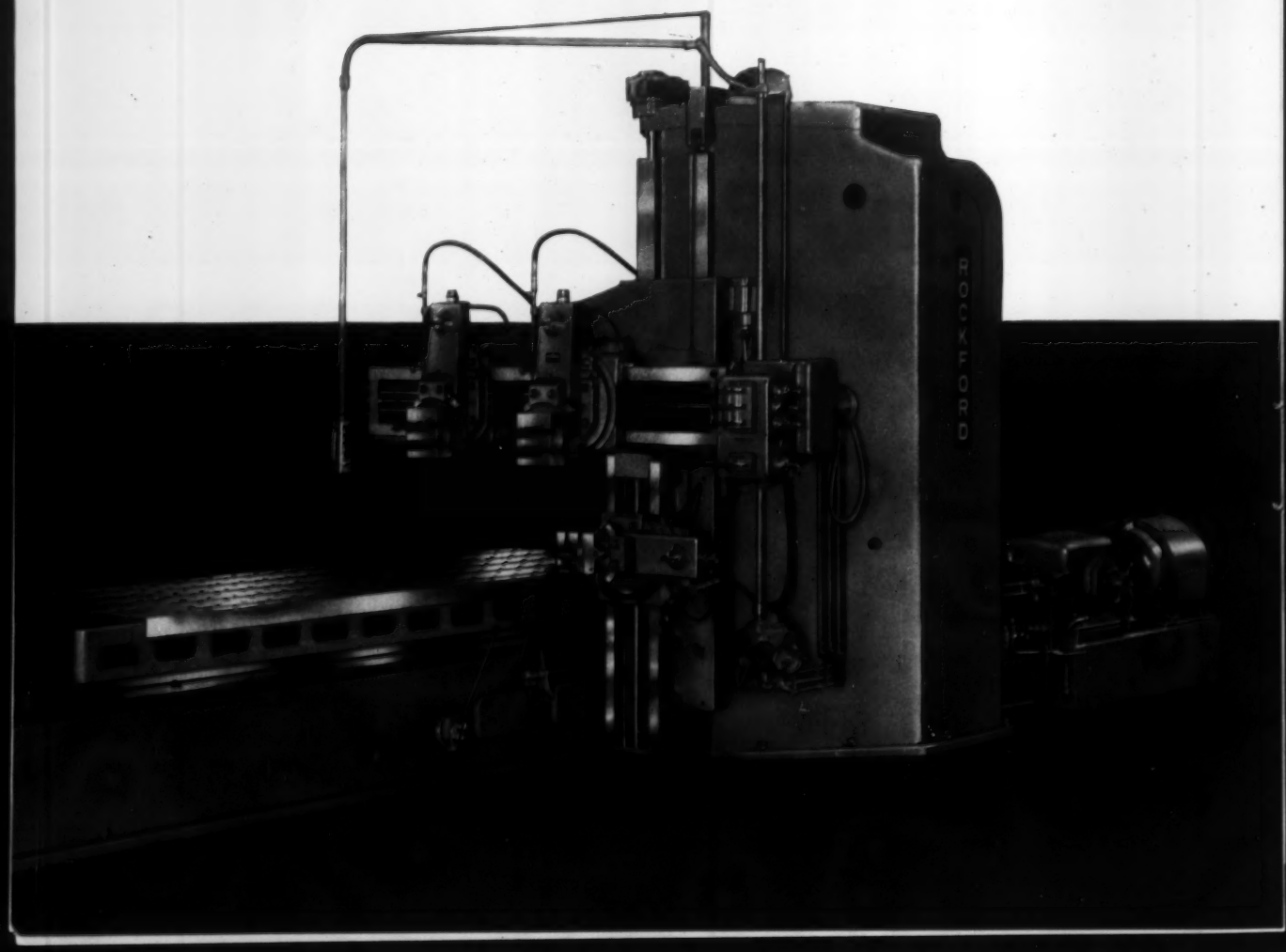
ELECTRO METALLURGICAL COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC **New York 17, N. Y.**
OFFICES: Birmingham • Chicago • Cleveland • Detroit
Houston • Los Angeles • New York • Pittsburgh • San Francisco
In Canada: Electro Metallurgical Company, Division of Union Carbide Canada Limited, Welland, Ontario

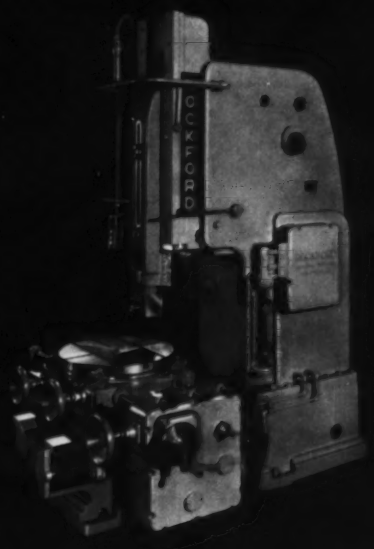
The term "Electromet" is a registered trade-mark of Union Carbide and Carbon Corporation.

hydraulic

drive and feeds

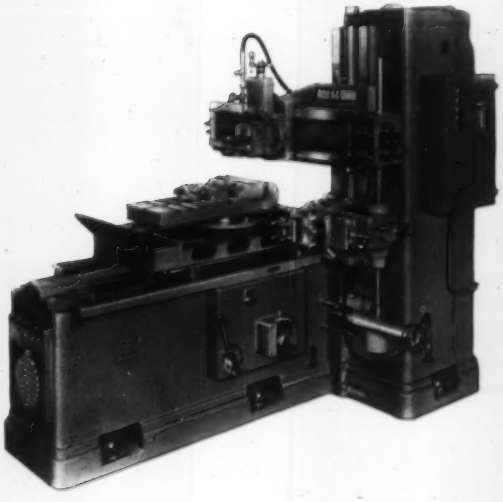
Hydraulic Drive and Feeds
—as a basic feature of
modern machine tool design—
assures outstanding performance,
measured in terms of fine work quality,
high production
and low operating cost.





THE
MACHINE TOOL
SHOW
CHICAGO, ILL.
SEPT. 6-17, 1955
INTERNATIONAL AMPHITHEATRE

See the latest model "Hydraulic" Machines in action at Booth No. 1423. Ask any Rockford Machine Tool Co. representative for complete details on the greater profits that can be obtained with "Hydraulic" Shapers, Planers, Slotters, Shaper-Planers and Kopy-Kats.



Hy-Draulic

ROCKFORD MACHINE TOOL CO.

2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS

Courtesy
ACF Industries

YOLOY "E" STEEL

Used in New York Subway Cars

Yoloy "E" is one of Youngstown's High Strength Low Alloy family of steels designed to cut dead weight without sacrificing strength. Thinner sections can be used with safety. Resistance to shock, vibration and corrosion is improved, thus maintenance costs are reduced.

Freight or passenger cars made from Yoloy "E" steel will provide longer life and lower operating costs due to its high resistance to corrosion.

Youngstown's Service Engineering personnel are available, at your request, to discuss the merits of the Yoloy family of steels in solving your specific requirements.

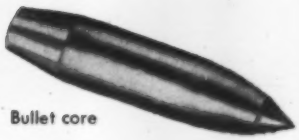
Youngstown

QUALITY
YOUNGSTOWN
SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

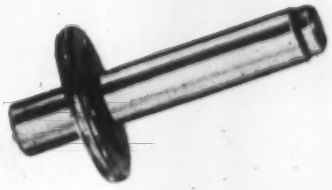


Bullet core

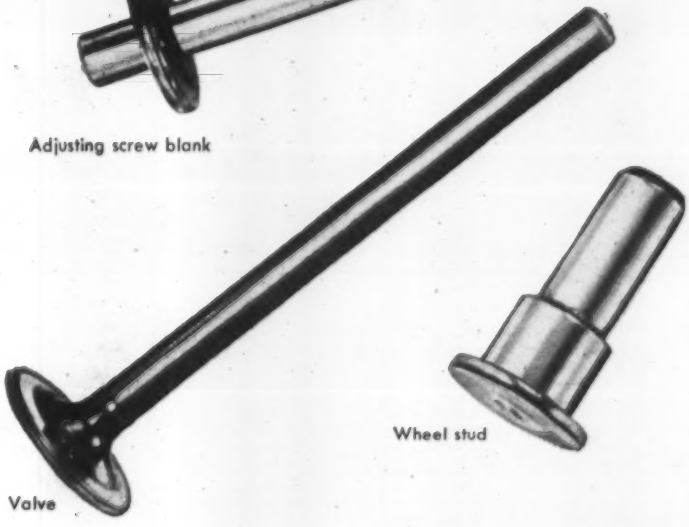
Cold steel flows like putty... with Pennsalt's FOS PROCESS

(SAVES TIME • METAL • LABOR)

Cap nut blank



Adjusting screw blank



Wheel stud

Valve

Cold extrusion is made practical, cold working of steel is more profitable with Pennsalt's Fos Process, a new method of locking a phosphate coating and lubricant onto a steel surface. Cold steel actually flows like putty when extreme pressures are applied. With Fos Process there is no breakdown of lubricants to cause seizing and galling. Die life increases . . . in one case by 666%!

Where can you use the Fos Process? In mass production of steel automotive and ordnance parts, in tube and wire drawing. Expensive steel alloys can often be replaced with plain carbon steels. The combination of Fos Process and severe cold working upgrades the physical and metallurgical properties of the steel . . . cuts unit costs!

Look at these few parts carefully. Many more parts and shapes like these can be cold-extruded or cold-headed economically, with little finish machining, by using Pennsalt's new Fos Process. Call the specialist from Pennsalt for a complete survey of your production line. Often your blueprint can help him determine rapidly if the Fos Process is for your immediate use. Fill in the coupon . . . get all the facts now!

Pennsalt Chemicals

Metal Processing Dept.
Pennsylvania Salt Manufacturing Company
Three Penn Center Plaza, Phila. 2, Pa.

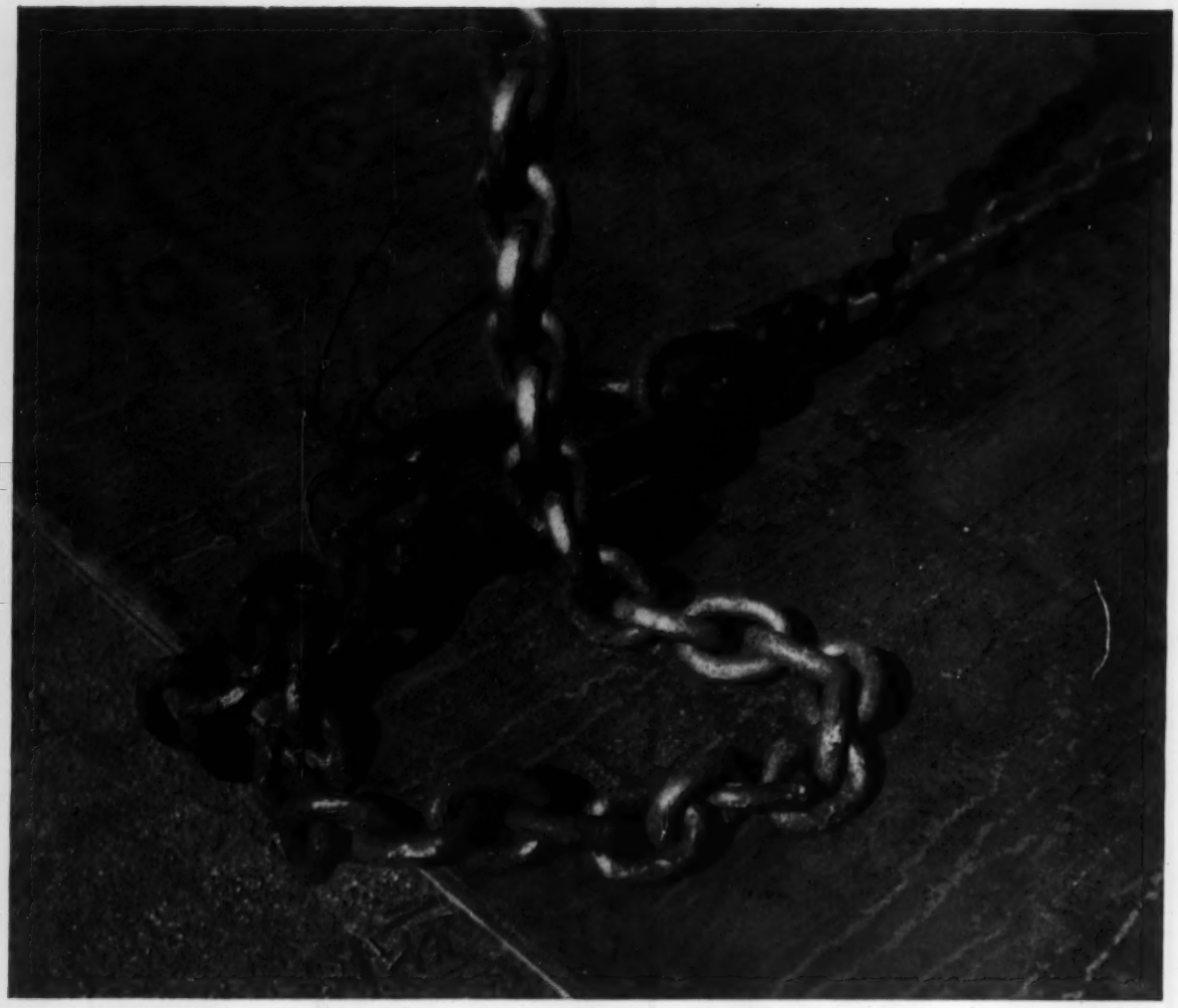
- ☐ Have Pennsalt specialist call.
- ☐ Send technical illustrated folder.
- ☐ Enclosed is blueprint . . . can I use Fos Process in mass-producing by cold extrusion?

Name ..... Title .....

Company .....

Address .....

City ..... Zone .... State .....



Practically no

chain reaction

despite 10-years' pickling service

We've made this picture just as big as possible . . .

So that you could examine for yourself the reaction of this Monel® chain to its 10 years in and out of the hot sulfuric with heavy steel plate and fabrications.

As you can see there are some nicks and a little wear . . . but there's certainly no sign of corrosion. And it's obvious that this chain still has many years of life ahead.

There's another chain just like it in the same service. Both are made of ¾ inch hot rolled Monel, gas welded at the link joints.

It's a very practical construction. Wrought Monel has the strength of steel and even greater toughness. It resists corrosion by sulfuric, hydrochloric, and hydrofluoric acid solutions at pickling strengths and temperatures. That makes for thin sections, light weight, savings. Furthermore Monel is readily welded and fabricated. That saves money, too, and makes repair easy. (But as you see, repairs are few and far between.)

If you like what you've seen in this picture . . . write today for "5-Way Savings in Pickling." It's packed with interesting illustrations of long-life pickling equipment for all kinds of pickling service.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N.Y.

INCO TRADE MARK

Monel Pickling Equipment

extra life
extra capacity
extra safety

STEEL

July 25, 1955

Metalworking Outlook

On a Per Capita Basis

The increase in gross national product over the last three quarters has been one of the fastest on record. But output in 1955 probably will fall slightly below its 1953 level on a per capita basis. Also, the industrial production index, now at an all-time high, is still about 3 per cent below its previous peak on a per capita basis. This all means that U.S. population is growing phenomenally. Look for about 205 million people in this country by 1975, compared with 150 million reported in the last census of 1950.

The President Gets Tough

President Eisenhower is angry about a rider to the Defense Department Appropriations Act. It requires him to consult Congress before closing industrial or business-type facilities owned by the military departments. He says he has no intention of obeying that edict without a court order. Even some Democratic congressmen agree that the provision is onerous. Look for its repeal.

Changing the Attack

Watch for Democrats to shift their sights slightly in their drive on industry men serving in government jobs. They have been attacking without-compensation people with vague charges, but their tough proposals to limit the use of WOC's have been watered down (see page 48). Now they'll tackle former industry executives who are working for the government on full salaries. The Senate Investigating Subcommittee is already asking questions about the connections of Air Force Secretary Harold E. Talbott with an industrial engineering firm in New York.

British Steel Scarce

U.S. steel buyers aren't the only ones bothered by lengthening deliveries. British purchasers are in even tighter straits. The second quarter's rail and dock strikes lost nearly 170,000 net tons of ingot steel production for the United Kingdom. That loss, coupled with a stringency that already existed, puts users over the barrel.

Steel Sales Excellent

Near record or peak sales are reported by steel companies for the second quarter. Samples: Republic Steel Corp. had sales of $570.7 million, compared with $432.6 million in the like 1954 quarter; Youngstown Sheet & Tube Co.'s sales of $158 million were 34.2 per cent above the same 1954 quarter and 13.6 per cent above the first quarter of this year; Allegheny Ludlum Steel Corp.'s $63.2 million in sales compares with $39.7 million dur-

ing the same 1954 quarter; Granite City Steel Co. had sales of $29.4 million, compared with $16.9 million in 1954's second quarter.

Auto Pact: Aftermath

Skilled auto workers are still unhappy about the settlement negotiated with Ford Motor Co. and General Motors Corp. They are not as likely to be laid off as some employees, so the supplemental unemployment plan has less meaning for them. A symptom of the dissatisfaction came last week when nearly 2000 skilled workers, mostly tool and die men, in Flint, Mich., voted to seek National Labor Relations Board permission to form a union independent of the United Auto Workers. The group would be known as the Society of Industrial Skilled Trades of North America.

Studebaker Headache

Biggest industrial relations headache for Studebaker-Packard Corp. management is what to do about its Studebaker workers. A year ago, it won UAW Local 5's agreement to a pay cut and other concessions. But now in office at the local is a new president, William Ogden, who won his job on a promise to "get tough." Result: Wildcat strikes, other disturbances.

Kaiser Counts on the Jeep

Kaiser Motors Corp. expects to earn a profit this year for the first time since 1948. Its concentration on the jeep accounts for the showing. Odds are that the company will discontinue making the Kaiser and Willys for domestic use. Some 1000 Kaisers were built in May and June for export to Argentina, but none for the domestic market has been assembled since June 30, 1954. No Willys car has been built since the export order.

Atomic Power Starts

Atomic electric power for commercial use coursed through Niagara-Mohawk Power Co.'s system July 18. A prototype of the reactor for the atomic submarine was put to work by General Electric Co. to produce steam to turn a 10,000-kw turbine generator at West Milton, N. Y. Atomic Energy Commission Chairman Lewis Strauss says companies are ready to build six commercial atomic power plants with a total capacity of 765,000 kw in the next five years.

Straws in the Wind

Lukens Steel Co. is calling a special stockholders meeting Aug. 23 to consider a change in the charter that would permit it to manufacture and market end products . . . The Defense department has reversed plans to accept foreign bids on diesel engine generators for Spanish bases being built for the Air Force and is considering bids from American manufacturers only . . . Vulcan Containers Inc., Chicago maker of shipping cans, drums and pails, is outfitting its salesmen with light Latin-American-style short-coats for hot weather wear . . . Westinghouse Electric Corp. is producing parts for atomic power plants at a Cheswick, Pa., plant.

Armco 17-7 PH Stainless Rates Tops at 300-800 F on

STRENGTH-WEIGHT BASIS

Guided Missile pressure-booster tank of Armco 17-7 PH is tested at 3500 psi pressure—a calculated average stress of 169,000 psi. This metal also is used for fuel tanks, to contain red or white fuming nitric acids and other oxidizers.

On a *strength-weight* basis, Armco 17-7 PH Stainless Steel is unexcelled for service at temperatures of 300 to 800 degrees F. In this temperature range, Armco 17-7 PH has these pound-for-pound characteristics in comparison with the best ferrous and non-ferrous metals:

**UNSURPASSED SHORT-TIME TENSILE STRENGTH*
**SUPERIOR SHORT-TIME YIELD STRENGTH*
**HIGHER STRESS-TO-RUPTURE STRENGTH*
**HIGHER CREEP STRENGTH*

Yet Armco 17-7 PH is not a costly metal. It is well within the stainless steel price range. Besides having fine corrosion resistance, it is readily fabricated and welded in the soft condition—draws and forms much like 18-8 stainless steel. After fabrication, it takes only a low-temperature double heat treatment at 1400 F plus 1050 F to develop its high mechanical properties.

Armco 17-7 PH is supplied in sheets, strip, plates, bars, angles and wire.

For complete data, just fill out and mail the coupon.

Armco Steel Corporation, 1525 Curtis Street, Middletown, Ohio
Tell me why Armco 17-7 PH is unexcelled on a strength-weight basis for service at 300 to 800 degrees F.

Name:_____

Firm:_____

Street:_____

City:_____ Zone_____ State_____

ARMCO STEEL CORPORATION 1525 CURTIS ST., MIDDLETOWN, OHIO

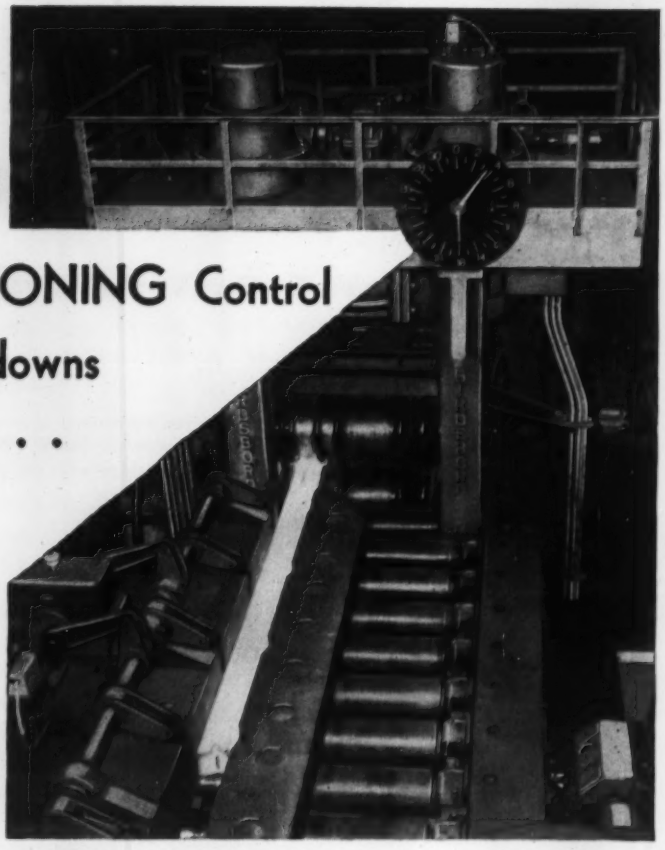
SPECIAL STEELS

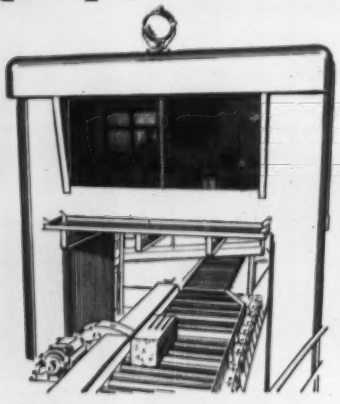
SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Now... EC&M

AUTOMATIC-POSITIONING Control

sets blooming mill screwdowns to *pin point* accuracy . . .





Reduces roller's tasks 1/3

•—•

New operators learn faster

•—•

Accurate drafts reduce rejections

On plate mills and roughing stands, edger rolls and side guide movements can be automatically coordinated with screwdown movements.

Indexes *automatically* from pass to pass to speed rolling and cut costs . . .

To meet the challenge of ever-increasing costs, rolling mill management-teams are turning to automatic operation of screwdowns and associated drives. Precise roll drafts give a higher quality product and new operators become seasoned in a shorter time. Removing the need to coordinate the screwdown with mill reversal enables the roller to concentrate on the manipulation of main motor and work tables for faster and more efficient operation.

The roller pushes a momentary-button only once for each pass, and the rolls are driven to the exact pre-selected settings . . . no overtravel with subsequent inching into position. The operation is entirely automatic for each complete rolling schedule.

This EC&M Automatic-Positioning Screwdown Control system is readily applied to ferrous and non-ferrous mills. New Booklet 9250 fully describes this control and shows many interesting installations. Write for your copy.

6187

THE ELECTRIC CONTROLLER & MFG. CO.

4498 Lee Road, • Cleveland 28, Ohio

Know Your Costs

Metalworking is enjoying one of its top years. Sales are at a $120-billion rate. Materials generally are available. Strike interruptions are rare. Restrictive governmental regulations are fewer. Seldom has industry had it so good.

Yet important segments of the industry are being plagued by excessive price competition.

We are not referring to price reductions resulting from increased efficiency and lower costs. They are entirely wholesome in a free economy. We refer to selling prices which in many cases are below true costs. They result in below par profit or actual loss.

Price cutting is noted in power generating equipment, domestic heating, wire rope, fabricated structural steel, castings, industrial heating equipment and many job shop operations. Many of these companies are drifting in a profitless prosperity.

The situation reminds us of the gasoline price wars of the 1930s. Fuel costing filling station operators 14 to 17 cents a gallon wholesale was sold retail for 12 and 14 cents. It just doesn't make sense.

Thoughtful management men in the affected industries believe the prime cause for the price wars lies in inadequate cost knowledge. Because they do not understand their true costs, price combatants are sending part of their capital out the door with every shipment.

Price wars, like international wars, are easier to start than to stop. We suggest the solution lies in better education on costs and in better systems of cost accounting.

The basic steel industry has done an outstanding job here. As recently as the late 1930s, steel price cutting bobbed up every time there was a sharp dip in operations. Company A, seeing a chance to land a large contract for sheet from an auto company, would offer a $2 to $4 concession. Companies B and C would meet competition, and the price war was on. No more steel was sold. Only the profit got slimmer or the loss became redder.

During the postwar years, steel producers educated themselves on costs and on the necessity for maintaining profits. Reduced steel operations in 1954 brought no price cutting. All companies shared the lower volume, and the industry's profits were maintained at about 6 per cent of sales.

We like the advice of a structural steel executive: "Know what your costs are and include all of them in your price. Then add a fair margin for profit. Pay less attention to what your competitors are bidding. Sell your product, design and service more than price."

Walter J. Campbell

MANAGING EDITOR

VALLEY

INGOT MOULDS

Valley Mould & Iron Corp.

General Offices: Hubbard, O.

Western Office: Chicago, Ill. Northern Office: Cleveland, O.

Why Are Customers Lost?

Of 100 lost customers . . .

68 drift away because of the supplier's indifference

14 have unadjusted grievances

9 buy elsewhere because of lower prices

5 buy elsewhere because of friends' influence

3 have moved

1 has gone out of business

What Cost Price Fighting?

STEEL PRICES weren't cut in 1954.

That's news? No, but it's significant history, perhaps even more significant than the price increase of July 6, 1955. Despite an ingot operating rate last year of only 71 per cent of capacity, producers did not cut prices. They would have in earlier days.

Example — Manufacturers of other metalworking products would do well to learn how steelmen exercised such restraint. For in last year's recession there were plenty of disastrous price wars. And more surprisingly, there are still a lot—in a year that may prove the best or second best in metalworking's history.

"In our field," comments a wire rope manufacturer, "price fighting is the worst in 30 years." A price war raged early this year among makers of power generating equipment. The gray iron foundry industry has on occasion been troubled by the problem. Makers of industrial heating equipment wrestle with the difficulty. A steel fabricator says: "Even though 1955 will be a record construction year, profits for many in this industry will be unsatisfactory because of disastrous and destructive price cutting."

No Collusion — No experienced and honest businessman wants price collusion, but a few segments of metalworking—steel and machine tools, for example—have demonstrated that it's possible to achieve price stability within the framework of free markets. Says a machine tool builder: "Price cutting based on genuine cost reductions is good for the economy, but price wars are as harmful as price fixing."

"We are not going to get anywhere just by cutting prices," says Roy C. Ingersoll, president and chairman of Borg-Warner Corp. "Once we know our companies are operating and producing efficiently, it is our responsibility then to sell our products at prices fair to the public, to our distributors and dealers, to our competition and to ourselves."

What's the Cause?

Why is Mr. Ingersoll's plea for fair prices necessary? Why this paradox of price wars in the midst of unparalleled prosperity? A look at the causes may reveal some of the remedies.

Number 1—A major cause of destructive price cutting is described by the structural steel fabricator: "Many jobs are being taken at less than cost, often, I think, because the low bidder doesn't know *all* his costs of doing business."

H. T. McAnly, partner in the accounting firm of Ernst & Ernst, points out: "Good cost accounting systems are still sadly lacking in many companies today. Because they don't know their true costs, some firms are unwittingly sending part of their capital out the door with every shipment."

Number 2 — Price fighting is more prevalent in bad times than in good. The marginal firms that do all right in fair weather start clutching at straws when the going gets tough. One of the first straws they think of is price.

Much of the destructive price cutting going on today is a holdover from the 1954 recession. Like a world armament race, a price war is easy to start, difficult to stop. Then, too, competition is still stiff, despite the prosperity; so many companies use price as a competitive weapon, ignoring the many others that are available which are even more effective. American Gear Manufacturers Association cites a survey (see the accompanying table) that shows only 9 out of 100 lost customers bought elsewhere because of a lower price.

Number 3 — A third cause of price fighting is ignorance of the role of profits. "Some businessmen," says Donald H. Workman, executive vice president of Gray Iron Founders' Society, are more interested in production than profits. They have the idea that if they keep their plants at or near capacity, profits will automatically come. Nothing could be more fallacious."

The basic reason you're in business is to make money. If your profits are low, you can't develop new or improve old products. You can't step up your service. You can't expand. You can't keep pace with the economy's growth.

Number 4 — The fourth major

To Minimize Price Fighting . . .

1. Know your costs; encourage your competitors to know theirs.
2. Emphasize quality, service, engineering more than price.
3. If you must talk price, talk about it last.
4. See that your management men know the role of profits and other economic facts of life.
5. Have the courage of your pricing convictions; don't yield to internal company or other pressures to cut prices.
6. Ignore price cutting by marginal firms or companies in distress.
7. When you can't ignore price cutting, point out to customers the true cost of low prices.
8. Beware of price-cutting rumors.

cause of price wars is economic ruthlessness. An unscrupulous purchasing agent may play one supplier against another. A big, well established firm may seek to get into a new field and be willing to take a loss for a while to gain a foothold.

Or the ruthlessness of economic events may cause panic price cutting. Through accident or miscalculation, a company may be forced to dispose of its stock at a loss.

What's the Remedy?

Those are the causes. What can you do about them?

Cost Knowledge — Your major weapon, many experts agree, is better cost knowledge. "I wish," laments a producer of stampings, "that my competitors knew what their costs were. There'd be far less destructive price cutting."

Trade associations can and do perform a vital service here. The Gray Iron Founders' Society for more than 30 years has sponsored local cost groups to study and compare costs from every angle. Group members send the "group cost consultant" a record of their average costs for the preceding quarter. The consultant prepares a comparison. Each foundry's costs are listed under a symbol (company names are not disclosed). Each member gets a copy of those comparisons which enable him to locate high cost items. National Machine Tool Builders Association started making cost studies 20 years ago.

The steel industry's first major steps toward cost control standards came from 1936 to 1939. Records were devolped on equipment utilization, man-hours required to produce a ton of steel, etc.

Business Hunger—To minimize price fighting resulting from lack of business, the steel industry found it helpful to emphasize factors other than price in competing last year for the limited tonnage. "In fact," points out one executive, "price is one of the poorest competitive tools. Anybody can meet your price. Not everybody can match your engineering, quality or service."

Remember that price may not be as important with purchasing agents as you think. The exhibit on page 41 indicates that of 100 ex-customers, 91 were lost for reasons other than price. Comments R. Bosch, a buyer for Thompson Products Inc.: "A man who buys solely on price sooner or later will be burned." Nor is a price cut a guarantee that volume will rise. "Price fighting last year," says a wire rope manufacturer, "didn't increase our over-all volume one iota."

He advises (and many purchasing agents agree): "Talk price, but talk about it last."

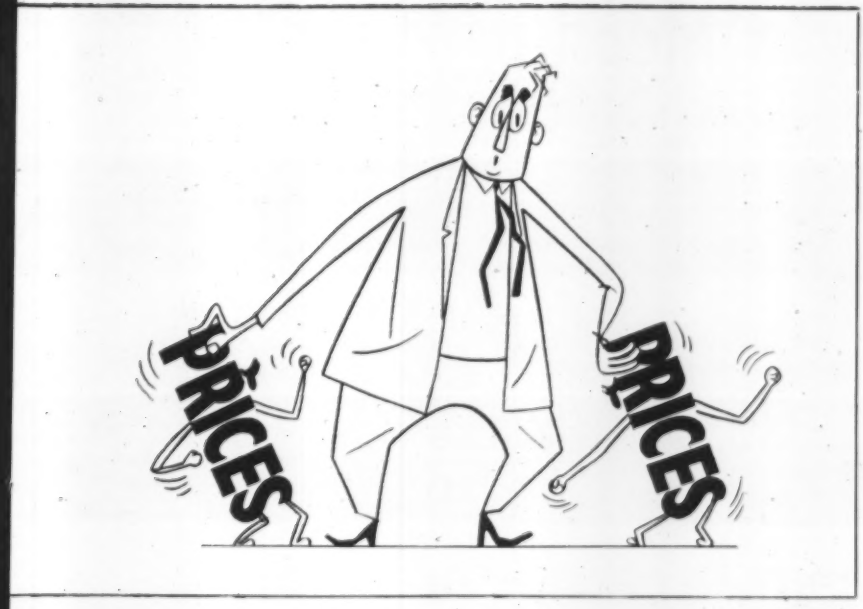
Profit Knowledge—Yet another way to minimize price fighting is through education on the economic facts of life. Some gray iron foundrymen aren't the only ones more interested in production than profits. "I was astounded to discover about a year ago," says the president of a heat treating firm, "that several bright young men I've been grooming for top management jobs had only a fuzzy idea of what profits do."

That company president started a course to show that: Profits attract and provide the capital needed to maintain and expand production. Profits direct investments into the production of things which consumers want most. Profits encourage people to take business risks. Profits serve as a measure of production efficiency.

He took as his text a course in basic economics sponsored by Republic Steel Corp. for its employees. Some trade associations, too, in programs aimed at junior employees of their members, are beginning to emphasize the role of profits.

"It helps," recalls the heat treating company president. "My salesmen think twice now before urging me to cut my quotations."

Courage of Convictions — "The greatest pressure on me to cut prices," says a machine tool company president, "comes from my own sales manager." He adds:



"Once you establish a policy of no price fighting, stick to it."

Advises a steel warehouseman: "The best thing is to ignore the action when a marginal outfit price cuts or some company has a distress sale. That kind of volume probably accounts for less than 1 per cent of total business and isn't worth worrying about."

A foundry president refused to reduce his original quotation and lost an account. Three months later he went to the ex-customer and asked: "What's the reject rate with your new supplier?" It was 3 per cent, while the original supplier's rate had been less than 1 per cent. The foundry president made calculations to prove that the higher rejections upped the costs to where they exceeded his original bid. He regained the account.

A capital equipment maker was underpriced by an established company trying to get a foothold in the field. "I put all my cards on the table," he recalls, "showed every penny of costs, showed how much I expected to make on the deal. I proved that the new competitor would lose money on his price, that he was using the customer as a means to do research on the job. I won the sale, and it points up a moral: In selling against a price situation, always try to point out that there can be more than meets the eye in a low price."

What's the Profit?

Profit is the key to the whole question of price cutting. If your profit is fair and your costs competitive, you can and should ignore all price cutting. It's caused by special and temporary conditions that you can afford to ignore.

But your costs must be competitive. Somebody may come along with lower costs. You must meet those new conditions. The cost of making plastic pipe is less than for producing the competing kinds of steel pipe. What to do? Several steel companies started to make the plastic product themselves to compete on costs. That's real competitive price cutting and is natural and desirable in a free market.

As part of this cost matter, you must make up your mind, too, about the quality and service you will deliver. As John Ruskin puts it: "There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are his prey."

To quote Borg-Warner's Mr. Ingersoll: "It is up to each of us to spend more time in selling the quality, the design, the efficiency and the other good features of our products."

• *Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, Steel, Penton Bldg., Cleveland 13, O.*

Reuther Objects

He wants Congress to investigate price increases in the automobile and steel industries

WALTER REUTHER is taking practice swings against "announced or contemplated" price increases in the automobile and steel industries.

He wants the Joint Congressional Committee on the Economic Report to investigate the matter. Odds are it will not do so directly, but the issue may come in by the side door in September and October when the CIO and United Auto Worker president is scheduled to testify before the group on automation.

Public Relations—Mr. Reuther gave a hint of his intentions in a well publicized letter to a committee member, Sen. Paul Douglas (Dem., Ill.). In it, he made his request for the investigation even though no auto price increases have been announced.

Gains for workers in labor settlements were aimed at increasing purchasing power, not contributing to inflation, Mr. Reuther says. He admits that escalator clauses protect the autoworkers but adds that his concern is the "wellbeing of all consumers and the health of the whole economy."

Argument—Mr. Reuther's contention is that higher prices should not follow gains scored in the Ford and General Motors labor contracts.

Mexican Steel Firm Wins Credit

The Export-Import Bank announces authorization of $2,055,000 credit in favor of Hojalata Y Lamina S. A., Monterey, Mexico.

The producer of sheet and strip steel will purchase U. S. equipment and services in an investment program involving about $2 million. The equipment will make it possible for the plant to up its annual capacity of flat rolled steel from about 72,000 to 112,000 tons a year.

Even with this increased production, it is expected that Mexico will be forced to expand imports of steel.

Steel, Auto Unions Mop Up

The UAW is accepting a straight wage boost in lieu of SUP in some contracts with smaller companies. Basic steel sets pattern among fabricators

THIS IS "Operation Cleanup" time for the United Steelworkers and United Auto Workers.

The pattern set in the basic steel settlement is generally being followed in the 1500 other contracts the steel union holds with nonbasic firms. But the terms set in the Ford and General Motors agreements are not being insisted upon in all cases by the UAW.

Customary—As usual, the United Steelworkers is negotiating the nonbasic settlements promptly. Although the basic contract, at 15 cents, is higher than expected, the union says it expects little trouble getting that figure. Few strikes are likely. Bulk of the fabricators' agreements probably will be signed by mid-August. The most important negotiation for the union is with Aluminum Co. of America. The Alcoa-steelworker contract expires July 30.

In smaller companies, the UAW is taking a straight wage boost instead of a 5-cent contribution to a supplemental unemployment plan (SUP). But it is insisting on a 20-cent package. With larger firms, the UAW is holding out for SUP. Last week there were indications it would have trouble getting the jobless benefits from American Motors Corp. The AMC contract expires Aug. 12.

Negotiations are going well with Chrysler Corp. Look for a settlement along Ford-GM lines well before Aug. 31, the expiration date for the contract. The Ford-GM pattern was followed in the new contract with White Motor Co.

Counterattack — A panel discussion on SUP sponsored by the National Association of Manufacturers revealed that management suffers from defeatism. The advice of industrial relations experts: Shake the negative attitude, introduce counterproposals and "take a strike" if necessary.

Challenged sharply was a ruling by Michigan's attorney general that SUP contracts do not conflict with unemployment compensation laws of the state. "This is a matter for determination by the state legislature," says Charles R. Sligh, president of NAM's executive committee. "An opinion by a CIO-sponsored attorney general may not be regarded as final."

Ultrasonics Takes a Look Inside

Sound waves at the rate of 2,250,000 cycles per second are used at the East Pittsburgh plant of Westinghouse Electric Corp. to inspect a massive forging from which a turbine-generator shaft will be machined. If the slightest flaw is detected, an "echo" will indicate its exact location. Formerly the only way of determining quality was by boring a hole through the center of the forging

U. S. To Show Atom Tools

Atomic wares of sixteen U. S. firms and industries in Great Britain, France, Belgium, the Netherlands, West Germany, Italy and Switzerland will be shown at the First International Exhibition of Peaceful Uses of Atomic Energy, Geneva, Switzerland, Aug. 8-20.

The affair is sponsored by the Swiss as an adjunct to the United Nations' International Conference on the Peaceful Uses of Atomic Energy. It'll be in Geneva at the same time. Delegations from 66 nations will attend the conference.

Trade Fair for the Atom

Exhibit space in the first U. S. trade show of the atomic industry has been reserved by 16 American industrial organizations and a group of U. S. and foreign governmental agencies.

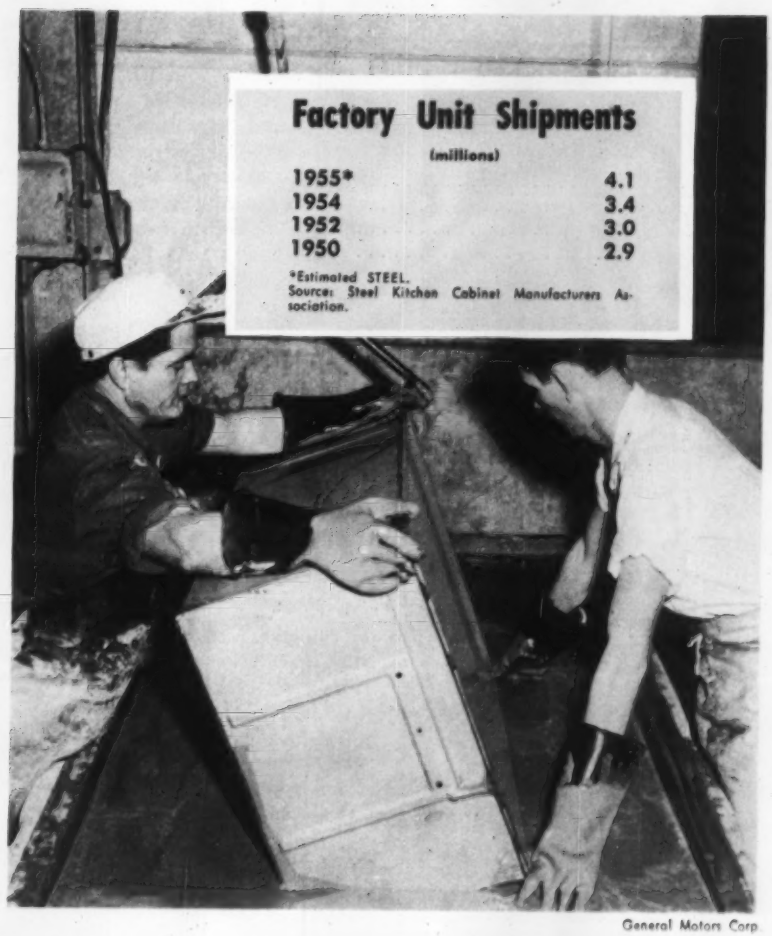
The trade fair will be held in Washington (Sept. 26-30) under the auspices of Atomic Industrial Forum, New York. Going on at the same time will be the Forum's annual fall meeting and sessions of the American Nuclear Society.

Displays will cover design engineering, package power, medical and research reactors, control systems, reactor materials, instrumentation, process chemicals, construction, and reactor components.

Container Business Up

Container manufacturers improved order backlogs while user inventories were stable at the end of April, states the Department of Commerce.

First quarter activity showed these increases over the first quarter of 1954: Metal caps, 9.9 per cent; steel drums, 6.2 per cent; reconditioned drums, 10 per cent; home canning closures, 31.5 per cent.



General Motors Corp.

A 25% sales gain for steel kitchen cabinets answers . . .

What Cooks in Kitchens?

RETAIL SALES of steel kitchen cabinets will reach a new crest of $228 million this year. They were $174.4 million last year.

This up-and-coming newcomer, which used 250,000 tons of steel in 1954, has developed only 12 to 15 per cent of its market potential, reports the Steel Kitchen Cabinet Manufacturers Association (SKCMA).

There are five major product categories: 1. Undersink cabinets. 2. Full cabinet sink units. 3. Base cabinets. 4. Wall cabinets. 5. Broom, linen and utility cabinets. Most producers make a line of sink fronts and countertops.

Prospect — Unit shipments will bulge some 25 per cent in 1955 (see chart). Construction activity will help boost second half sales above the 20 per cent gain registered during the first half of this year over the first six months of 1954.

Berger Mfg. Division, Republic Steel Corp., reports: "At the moment we are enjoying the utopian idea of doing 50 per cent of our business with builders of new homes." American Kitchens, division of Avco Mfg. Corp., estimates that 40 per cent of its production is going to new homes. SKCMA reports that about 50 per cent of the units produced are going to builders for new homes while the remainder is being used for kitchen modernization.

Up and Down—Sales reports of manufacturers show a mixed pattern. General Electric Co.'s Major Appliance division says: "Our kitchen cabinet sales for the first six months of 1955 are ahead of the first six months of last year by about 100 per cent." St. Charles Mfg. Co. increased sales by some 34 per cent for the same period, but Avco's Crosley and Bendix appliance divisions report sales are "about the same."

Improvements — Steel kitchen cabinets are sound deadened and most doors are on nylon rollers. The units can be used in the development of "packaged kitchens." A trained crew can install a kitchen in less than 30 minutes. Room planning is simplified by the wide range of sizes.

Merchandising—Color is one key to better sales. SKCMA estimates that 80 per cent of its members use color. This provides an opportunity for a matched or mixed kitchen.

All major steel companies have helped to some extent in promoting steel kitchen cabinets. After its successful Operation Snowflake last fall—a campaign to promote appliances—U. S. Steel introduced Operation Wifesaver this spring. It gave additional support to the steel kitchen cabinet industry. In September, producers will launch the second Steel Kitchen Cabinet Month—the signal for the introduction of new models.

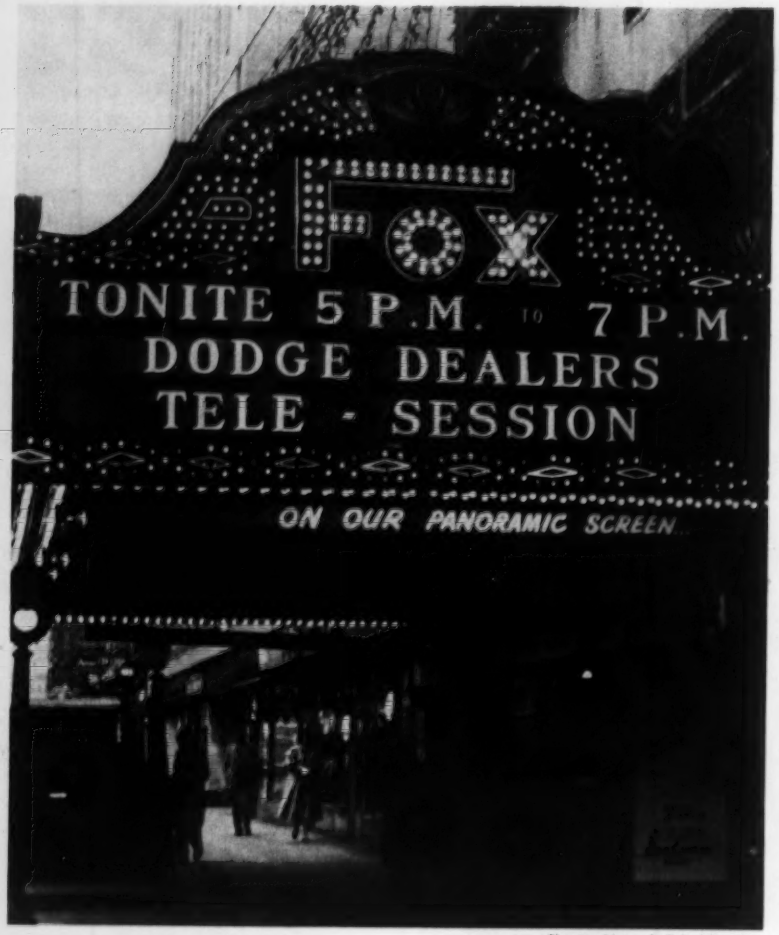
But firms like Mullins Mfg. Corp. believe even more can be done by basic steel producers to help develop the potential market.

Hoover Savings: $15 Million

The way to large savings is to prune the red tape imposed upon individuals and corporations in a "wilderness of 4700 different reports, forms and questionnaires," states the Hoover Commission's Task Force on Paperwork Management.

In dry run, the group racked up annual savings of more than $15 million on 26 representative paperwork items through co-operative action of industries and the federal agencies involved.

The task force says that over 50 per cent of red-tape reports are to state, county and municipal agencies.



Theatre Network Television Inc.

Coming attraction in metalworking as . . .

Industry Puts TV to Work

GOT A PROBLEM in mass communication? Closed-circuit television could be the answer.

A relative newcomer to industrial communication, it already has proved its worth in several roles: Sales meetings, introduction of new products, sales training programs, stockholders' meetings and a growing list of employer-employee and public relations programs.

Setup — Theatre Network Television Inc., New York, is the largest outfit in closed-circuit television. Called TNT, it has 57 large-screen mobile projector units.

Its basic network includes 41 cities where this equipment is maintained, but the units can be set up in theaters and hotels in any city which has proper coaxial cable or telephone connections. There were 52 cities involved in General Motors Corp.'s 50 millionth car celebration last November.

Cases—There are three main advantages in using a closed-circuit setup for mass communication.

It saves money. Sun Oil Co. used it this year to introduce a new petroleum product to its dealer organization. The network covered 30 cities and reached 14,000 salesmen. Robert G. Dunlop, president of Sun Oil, claims it cost 60 per cent less than a similar introduction last year when each dealer organization was contacted personally.

Closed-circuit TV saves time. With it, Sun Oil this year did in 1 hour what it took 40 days to do last year without it.

During its 1953 sales convention, International Business Machines Corp. wanted to introduce to its 1500 top salesmen the new 702 electronic data processing machine. But the mechanical brain was too heavy to take from the Poughkeepsie, N. Y., plant to the ballroom of the Waldorf in New York. And it was undergoing tests which could not be interrupted. To take the 1500 salesmen to Poughkeepsie in groups small enough to handle would have taken several days. TNT set up a circuit between the two cities, and while a technician explained the operation of the 702 in Poughkeepsie, the salesmen sat in New York and took notes.

With closed-circuit TV, you can do things which would be impossible or impracticable by personal contact. Necchi-Elna Sewing Machine Co. introduced a new machine last month. For the first time, its entire distributor organization, including retail dealers, was in on it. TNT set up a 30-city network for this one, and Necchi-Elna planned a 4-hour convention in each city built around the 1-hour telecast. Necchi-Elna officials feel they "couldn't have had a meeting like this and had all our dealers and salesmen in at one time" without the aid of TV.

Better Stockholders Meetings—Nathan L. Halpern, president of TNT, sees the day when stockholders meetings will be presented on TV. General Electric Co. used a closed circuit to handle the overflow at its 1955 meeting in Schenectady, N. Y. As ownership of American corporations becomes more diversified, Mr. Halpern says companies may set up a coast-to-coast two-way network to enable all stockholders to participate in the meeting without having to travel long distances.

Any size company can use closed-circuit television, Mr. Halpern feels. The service can be tailored to the needs of the company. The next time your firm has a knotty mass communication problem, it might pay you to check a closed-circuit television producer. He might be able to save you time and money.

NEA

Treasury Secretary George M. Humphrey speaks against . . .

A Danger: Tax Write-Offs

DECREASED TAX collections due to rapid tax amortization will cost the government some $800 million in revenue during the current fiscal year, says George M. Humphrey, treasury secretary.

Appearing before a House Government Operations subcommittee on July 18, Secretary Humphrey declared that the government fast tax write-off program "is an artificial stimulus of a dangerous type." His recommendation: There should be a sharp reduction in the use of these special tax incentives to encourage industrial expansion for defense.

How They Work — A quick tax write-off allowance from the federal government permits a company to deduct the cost of new facilities from its taxable income at a faster rate than is normally allowed. This has the effect of cutting the firm's income tax payment during the early years of its operation of the new facility.

Mr. Humphrey points out that tax losses in fiscal 1955 were $776 million and that in fiscal 1957 some $810 million will be lost. Extension of a program which brings such losses to the treasury, says the secretary, may stand in the way of general tax reductions which are important to all business and to the economic growth and expansion of this country.

Flash Back—Before his appearance before the subcommittee, tax amortization had been thoroughly discussed at the Defense Mobilization Board meeting of July 14. Arthur S. Flemming, director, Office of Defense Mobilization, gave a complete rundown on the subject. After hearing it, the treasury boss said he was still against fast tax write-offs except in special cases. Result: ODM will consider expansion goals case by case. This is the first step toward slowing down the tax amortization program.

On his Monday appearance before the House subcommittee, Mr. Humphrey did admit that the program had served a useful purpose in stimulating industrial expansion during the Korean War.

Tax Help—The treasury secretary then pointed out that substantial tax relief has been given to U. S. companies since Korea. Examples: 1. The excess profits tax which could take up to 82 per cent of a company's profits has been repealed. 2. Broad revision of the tax laws now provides for faster capital recovery for all U. S. taxpayers.

"It is dangerous to use the tax laws for social purposes, to favor one citizen or group of citizens over others, to exercise economic controls or to indirectly subsidize any segment of our economy," he states. "To use the rapid write-off program as an indirect subsidy means that the stimulants are applied by men not by law. Congress should decide where and how subsidy assistance should be applied."

Future — Mr. Humphrey emphasized that he is not being critical of the past but that the usefulness of such a program in the future is to use it sparingly and rigidly so that rapid amortization is confined to direct war requirements.

Railroad Mechanizes Repair

The Erie Railroad is using the technique of a mechanized production line in its maintenance-of-way work.

A hydraulic spike puller pulls spikes, ties are handled by cranes and spaced with mechanical tie spacers and spikes are driven with pneumatic hammers. A hydraulic track liner assures a smooth ride.

The mechanized gang has 36 men. It can complete up to 3400 ft of track and renew up to 560 ties a day. It can do five times the work formerly done by 39 men.

Dems Shoot To Kill WOC's

ON A PREMISE that industry representatives may give "breaks" to their own companies, Democratic congressmen on the Senate Banking committee and elsewhere are pressing to get rid of WOC's (industry men who work for the government without compensation).

Action—By a one vote margin, the Senate Democratic amendment to the Defense Production Act, which would have eliminated WOC's except in case of future emergency or war, was defeated last week. The Senate version now resembles the House amendment to DPA. Thus, the Office of Defense Mobilization and the Department of Commerce stemmed the tide with arguments that if we aren't in an emergency then there is no need to spend billions for defense and no need for DPA.

The House version of the bill would allow WOC's to be used only in an advisory capacity. It also puts tight limits on the administration's authority to borrow industry executives. Members of the House committee say they voted to extend the act for only one year rather than two so that they will be able to take another look at the WOC program next year. WOC's, under provisions of the bill, would also be barred from making contracts with their private employers.

History—During World War I, the War Industries board was headed and staffed by WOC's (they were called dollar-a-year men). Its director was Bernard M. Baruch. The War Production Board in World War II called upon industry men to aid government; during the Korean conflict, the Defense Production Administration and the Office of Price Stabilization were staffed by WOC's. These agencies were created under Democratic guidance. Now, the industry man—according to the Democrats—is a menace.

Charles F. Honeywell, administrator, Business & Defense Services Administration, told STEEL: We judge a man on caliber. Companies, large and small, are represented on our staff. Two points to remember, says Mr. Honeywell, are that the industry men bring in current industrial knowledge which helps educate career government workers. Point two: It brings top level management to government for six months who could not afford to accept a permanent government position.

Loyal service by hundreds of industry leaders would seem to rule out the favoritism theory. The point to remember: Valuable men are being given training which will enable the government to have a manpower nucleus in case of war.

A Must: War Controls

Behind the scenes, Edward F. Phelps, director of stabilization, ODM, is developing controls necessary for war. The primary mission of the stabilization staff is to determine what will happen in an attack and its economic consequences. From the answers will come the specific measures which the U.S. will take. An important responsibility, says Mr. Phelps, is to develop interest in government agencies which will be affected.

The recently formed Office of Minerals Mobilization, Department of Interior, will be a pick-and-shovel basic research department for the government. It will be a clearing house for information relating to what should be done about precious minerals and metals. It is anticipated that this office also will make stockpile recommendations.

Meet Theodore S. Hodkins: He is the new director of the Chemical & Rubber division of the Business & Defense Services Administration.

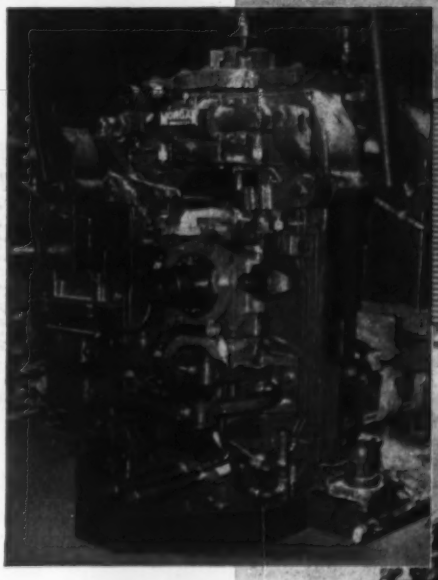
Mr. Hodkins is on leave from Reichhold Chemicals Inc., where he is vice president. He can be reached in Washington by calling Sterling 3-9200, Ext. 4843.

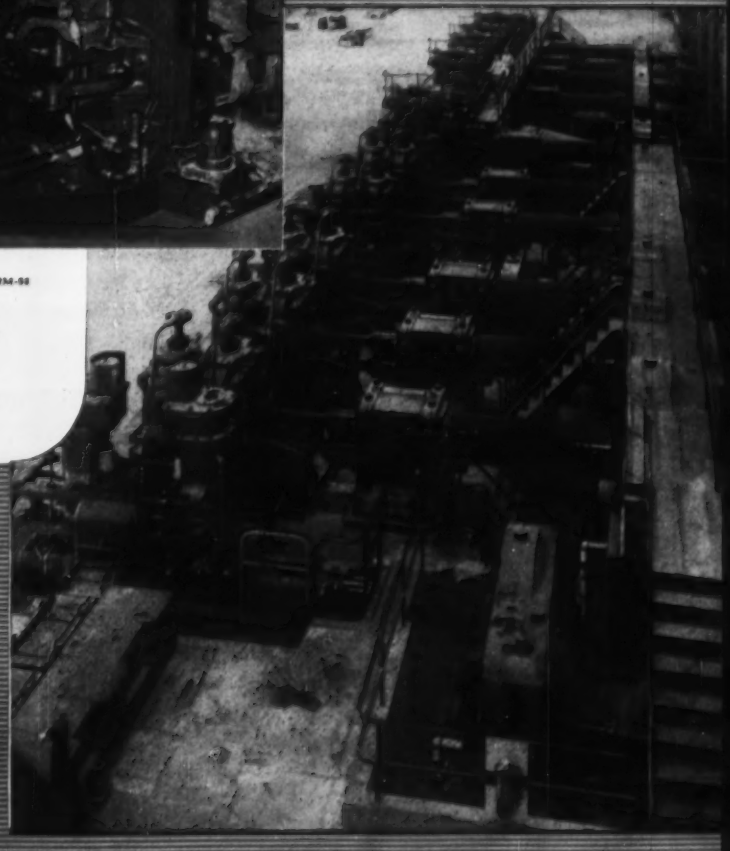
FAIRLESS Makes Records

WITH NEW

MORGAN Skelp Mill

Hailed as one of the great strides toward the increase in American steelmaking capacity is the Fairless Works of the United States Steel Corporation at Morrisville, Pa. National Tube Division's 18" Skelp Mill, a vital part of this enterprise, was designed and built by Morgan Construction Company. Product gauge is assured by rigid closed top roll housings and MORGOIL roll neck bearings. Four ton slabs of steel become four ton coils of high quality skelp. For these, Morgan handling equipment meets exacting requirements for the safety and comfort of the mill operators with no loss of efficiency.





RM-98

MORGAN CONSTRUCTION CO.

WORCESTER, MASSACHUSETTS

English Rep., International Construction Co., 56 Kingsway, London W. C. 2, Eng.

MORGAN
WORCESTER

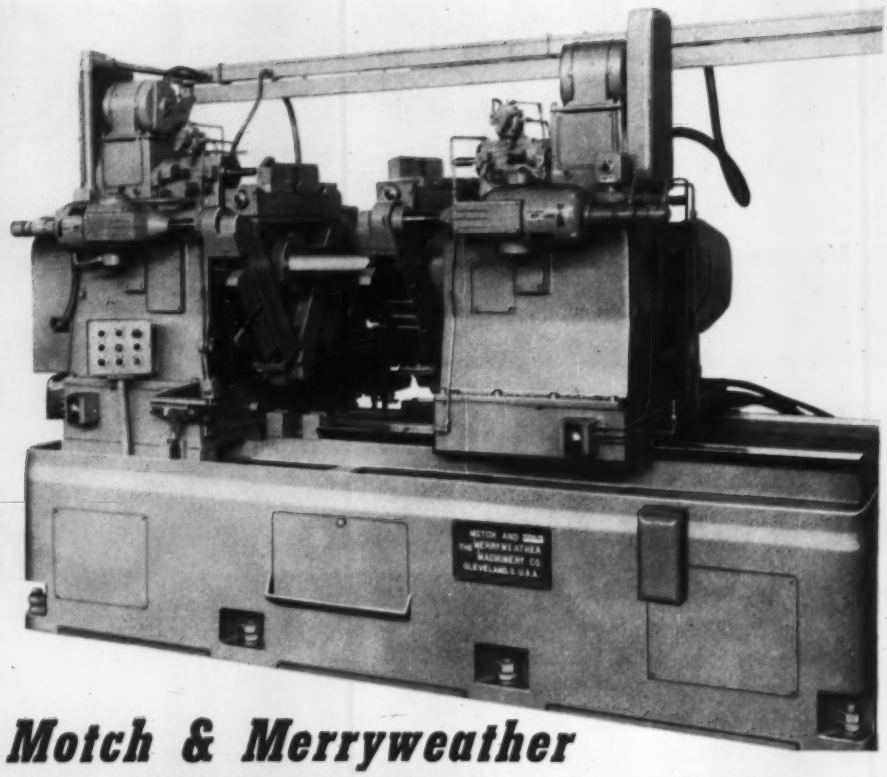
ROLLING MILLS · MORGOIL BEARINGS
WIRE MILLS · GAS PRODUCERS · EJECTORS
REGENERATIVE FURNACE CONTROL

Heavy Duty

Rigid

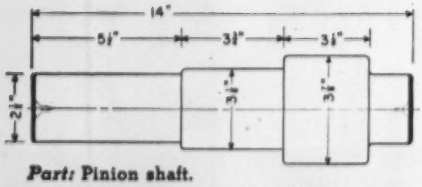
Accurate

Productive



The Motch & Merryweather
No. 3-MCT Milling and Centering Machine
FOR UNIVERSAL PRODUCTION

Adopt this Active Asset to Automation



Part: **Pinion shaft.**
Operation: **Mill and center drill both ends.**
Production: **220 pieces per hour.**

Mass production, yet with extreme accuracy, — that is the central requirement for preparing parts which go to your automatic equipment. Begin automation *right* by preparing your parts *right* on the Motch & Merryweather 3-MCT Milling and Centering Machine. This universal heavy duty unit excels for high single-purpose production, while quick set-up makes short runs profitable. Automatic loading and unloading may be incorporated to handle extremely high production. The 3-MCT performs with a dispatch and precision hitherto unknown.

THE MOTCH & MERRYWEATHER MACHINERY CO.

MACHINERY MANUFACTURING DIVISION
CLEVELAND 13, OHIO

GE's Rader: 'People Are All-important'

"OUR INDUSTRY is young; our horizons are boundless," believes Dr. Louis T. Rader, general manager of General Electric Co.'s new Specialty Control Department at Waynesboro, Va.

The biggest single thing holding back the growth of industrial electronics, Dr. Rader says, has been too high costs. Even when electronics could have done the job better, the big price tag scared buyers off.

Competitive—Now prices have come down. At the same time, quality is up. Together, they mean electronics is priced competitively with older ways of doing things.

"We anticipate that the demand for electronic controls for modern, highly mechanized production lines will double within the next five years and triple by 1965," Dr. Rader notes. "But we can't pin our hopes on the bright market prospects or what seem to be limitless possibilities of the electronics industry. In our field we have some 200 competitors whom we must out-think, out-produce and out-sell."

Engineers—That's why he says: "We consider our people the most important part of the Specialty Control Department." One out of five is an engineer.

Dr. Rader was born in Alberta, Canada, in an area known as Crows Nest Pass. He graduated from the University of British Columbia in 1933 with a B. S. in Electrical Engineering. "Take part in sports?" he remarks. "No, I was too busy working for a living"—in a gold mine part of the time.

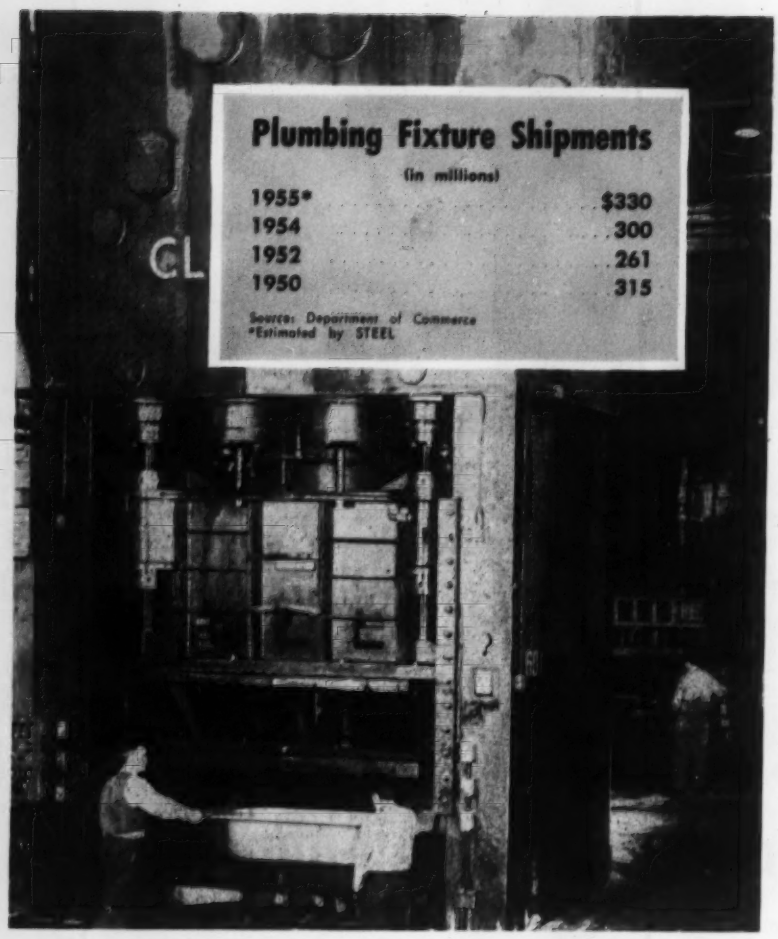
To GE—Equipped with his degree, he moved stateside and entered California Institute of Technology on a two-year fellowship. He received his M. S. in 1935, his Ph. D. in 1938.

In 1937, while still working on his doctorate, he joined General Electric. The following year he entered GE's Advanced Engineering course, went from there to the Control Engineering Division as a design engineer in the advanced development section working on arc interruption and magnetic devices.

Educator—After the war, the terrific demand for educators drew Dr. Rader to Illinois Institute of Technology as head of the Electrical Engineering Department and consultant to the Armour Research Foundation.

But two years later he was back at GE. When the Specialty Control Department was set up in 1953, Dr. Rader was named General Manager with full authority and responsibility for running the department—"his business" as GE refers to it under the company's decentralization policy.

Products at Specialty Control range from thumb-size relays for intricate aircraft electronic gear to complex programming systems that automatically control large presses.



Kaiser Steel Corp.

Plumbing fixture industry enjoys big splash as . . .

Sales Jump 10%

MODERNIZATION of old homes and the high construction rate of new office buildings, motels and homes will bring a record year to the plumbing fixture industry.

Sales of $300 million (see chart) in 1954 surpassed the previous year by $22 million. Last year was the third best on record, and a 10 per cent increase will top 1950's record $315 million in shipments.

Construction — Housing starts are estimated at 1.3 million this year compared with 1.2 million in 1954, points out Crane Co., Chicago. And there is a significant amount of renovating, both in bathrooms and kitchens, comments John C. Oliver, secretary, Porcelain Enamel Institute Inc., Washington.

To add new sales appeal, bathroom fittings are now available with monograms, reports American Radiator & Standard Sanitary Corp., Pittsburgh. Compartmentalized bathrooms and lavatory dressing tables in various colors are also being introduced to entice John Q. Public.

"Popularity of colored fixtures continues to grow," says William E. Kramer, secretary, Plumbing Fixture Manufacturers Association, Washington, "and this phase of our industry is just in its infancy." Other trends which are developing: Lavatories to conceal all piping, more easily installed fixtures and minimum maintenance equipment.

Materials Trend—Cast iron fixtures still lead the dollar parade, reports the Department of Commerce. Shipments of cast iron plumbing goods totaled $131 million in 1954. Vitreous china ranked second with $101 million in shipments. Steel, growing in popularity, registered shipments totaling $65 million.

Best gains in the use of porcelain enamel on formed steel are in the production of kitchen sinks and bathtubs, PEI reports. Steel now accounts for 55 per cent of all kitchen sinks produced, compared with 41 per cent in 1948. While steel is growing in bathtub production, cast iron still leads by a seven-to-three ratio. Most toilet facilities are china.

Sales Leaders—Best sellers in plumbing fixtures last year: Water closets, 3.5 million units; lavatories, 3.2 million units; flush tanks, 3 million units; kitchen sinks, 2.2 million; and bathtubs, 2.1 million, reports the Commerce department. Other industry products include shower stalls, laundry trays and drinking fountains.

Two-thirds of the producers contacted by STEEL look for a sales increase of at least 10 per cent over last year.

Enamel Products Co., Cleveland, says kitchen sink sales are strong and that spring sales jumped 10 per cent. Meanwhile American Standard is supporting its optimism with a two-year modernization and expansion program now underway at Baltimore.

With first-half sales up 25 per cent, Richmond Radiator Co., Metuchen, N. J., believes this will be a record year. And James B. Clow & Sons, Chicago, reports: "Demand is heavy for fixtures to be used in new buildings. Total 1955 business will be better than '54 by 5 to 10 per cent, but competition is keen."

Steelworkers' Net Worth Rises

Latest audit of United Steelworkers of America shows the net worth of the union at the end of 1954 to be $17,626,332. This is an increase of over $600,000 in six months.

As an investment and possible building site the union purchased four lots at 17th street and New York avenue, Washington, adjacent to land now owned by the union. However, there are no immediate plans for building.

Freight-car shortage attains emergency status as . . .

ICC To Speed Turn-Around

THE INTERSTATE Commerce Commission is moving to reduce the acute shortage of freight cars. Temporary regulations, which will be in effect from July 25 to Dec. 31, will attempt to keep more cars in service.

Critical Situation—As of July 2, the freight car shortage reached 10,685 cars compared with a shortage of 1947 cars during the same week in 1954, reports Arthur H. Gass, chairman of the Car Service division, Association of American Railroads. Add to this the rapid upsurge in general business activity, trucker's strikes in the West and New England and the heavy grain harvest getting under way, says C. W. Taylor, director, ICC's Bureau of Safety & Service, and you can see why loadings will be heavy until October. Weighing all the facts, the commission determined that an emergency existed and that immediate action was needed to promote added car service in the "interest of the public and the commerce of the people."

The new ICC rules state: 1. Loaded cars will be placed on a carrier's or consignee's unloading tracks within 24 hours after the first arrival at the destination. 2. Empty cars must be moved from unloading points or interchange tracks of industrial plants within 24 hours after unloading or release by the consignee unless the cars are ordered by the shipper for reloading within the 24 hour period. 3. Cars taken out of service for repairs must be put back in action as soon as possible. ICC's new regulations are taken from AAR's voluntary rules. However, ICC will be able to fine those who do not adhere.

Government Note—A House government operations subcommittee is opening hearings to find out why the tax amortization program has not stimulated more freight cars.

At a special meeting of AAR in Chicago last month, the railroads pledged a minimum of 38,000 new freight cars to help relieve the shortage.

Chesapeake & Ohio Railway

Freight trains: Too heavily loaded?

Bridge Firm, Ex-Packer Merge

It is unusual, but there are good reasons behind the merger of Mount Vernon Bridge Co., builder of steel bridges and lift spans, and Miller & Hart Inc., a former Chicago meat packing firm now in the cold storage business.

Clyde G. Conley, president of Mount Vernon Bridge Co., will become chairman of the board of the surviving company to be known as Mount Vernon Co. He says the merger will provide a good investment for the liquid assets of Miller & Hart and increase the working capital available to the Mt. Vernon, O., operations. Both the metalworking and cold storage businesses will be continued by Mount Vernon Co.

An exchange of stock will complete the merger by the end of August.

Inland Offers Stock Plan

An estimated 23,750 employees will get options to buy up to 500,000 shares in Inland Steel Co., Chicago, at $69.75 a share—10 per cent less than its recent average price.

Joseph L. Block, Inland president, said the success of a 1952 option plan prompted the new offer. It is modeled closely on the earlier plan.

All employees who have worked for the company for two years or more will receive options entitling them to purchase stock in amount equal to 30 per cent of their 1954 earnings. Employees who accept their options authorize payroll deductions which will accumulate enough savings over a three-year period to pay for their stock.

The last payroll deduction under the old plan will be completed in August before the first payments are due under the new plan.

Over 5000 employees bought stock under the 1952 plan.

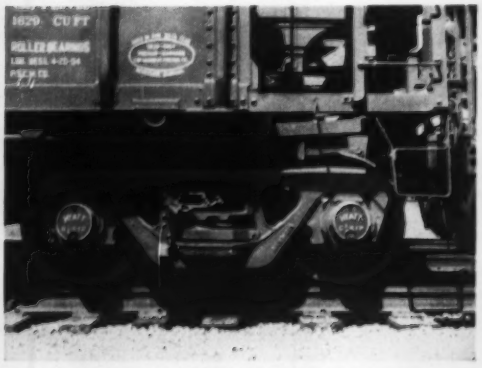
Vital Venezuelan ore speeds on HYATT ROLLER BEARINGS in

1000 ULTRA-MODERN FREIGHT CARS!

1000 tons of iron ore per hour are unloaded from ship, conveyed to car-loading bins

1000 special cars with the most modern devices were purchased by four railroads

Ore moves from Mobile to Birmingham mills on one of the fastest schedules in history



Every car has HYATT Roller Bearings to assure delay-free delivery of the vital ore

Down at the Mobile docks operated by Marine Bulk Handling Corporation, a rich, red flood of high-grade Venezuelan ore pours from a ship's hold almost daily. This is the story of how it speeds from Mobile to the Birmingham blast furnaces of United States Steel's Tennessee Coal and Iron Division.

The job is so big that four progressive railroads—the Gulf, Mobile and Ohio, the Louisville and Nashville, the St. Louis-San Francisco, and the Southern—jointly purchased a fleet of 1000 ultra-modern hopper cars specially designed for this run. One of the most important specifications was *roller bearing journal boxes*—to cut hours from running time, prevent hot-box delays, sharply reduce motive power, lubrication and inspection costs. The only question was what *make* of roller bearings to buy. And after careful comparison the choice was easy: HYATTS! All four railroads specified *free-lateral, easy-to-install* Hyatt Journal Boxes—100%!

Here's proof again that when railroads get *all* the facts about roller bearings, they're wise to choose HYATTS! Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARING JOURNAL BOXES

RUNNING MATE OF FASTER FREIGHT

Story of an Idea

Chrysler may have a revolutionary thought: Putting the fenders and hood on car before metal finishing. Technique saves on space, handling

LOOKING at the obvious has enabled Chrysler division of Chrysler Corp. to increase the capacity of its Jefferson avenue plant 42 per cent through only a 15 per cent increase in floor space.

The basic key to the startling discrepancy between those two figures lies largely in one basic change in method: Putting the fenders and hood onto the car before metal finishing.

Significance — This little trick would not be too significant except that no one has ever done it that way in volume. Thunderbird bodies are built by Budd Co. and shipped complete with fenders and hood to Ford Motor Co. for metal finishing, but the basic design of the body makes such a technique almost imperative. Likewise, the Corvette is built up in one chunk, but again for much the same reasons.

Accepted technique for other cars is to build up the body in white from stampings, including the rear quarter panels. Why? Because as the rear fender lost its identity, leading the panel into the rest of the body structure became accepted practice, replacing the four fenders of yore. But the front fenders and grille are thought of as a separate assembly from the body of the car, being painted and assembled separately.

Question—There is nothing particularly wrong with this state of affairs. But if you wonder about it, there is some room for question as to why it's being done that way. Such wondering on the part of A. M. Fleming, Chrysler division's manufacturing vice president, led to the present move. And now people are asking "Why didn't we do it that way before?"

It must be conceded right off the bat that a body with front fenders and hood attached is no small handful. Conveyors and ovens must be long to have the same number of bodies on the line. With some present chassis designs there could be a problem in dropping a fendered body as well, and there are some who might argue that not painting between the fender and body joints will add to corrosion possibilities.

No Difficulty — Chrysler has considered all these possibilities and finds that in its case there is no problem. Capacities have been tailored to the new production capacity, and corrosion studies have demonstrated that the new technique does not increase corrosion.

On the other side of the ledger are plenty of advantages. To begin with, a complete painting, sanding and metal finishing shop to handle the fenders and hoods is eliminated. Part of the body assembly, these units will now be finished in the one operation with the rest of the body. If you remember that it takes pipes and attendant plumbing with just as many colors to paint fenders and hoods as it does to paint bodies and ovens to dry them, elimination of this facility amounts to a significant saving in itself.

No Mis-match—In addition, mismatching of paint is impossible since all exterior parts of the car are painted simultaneously. Paint matching is not the problem it used to be with modern controls, but variations in manufacturing and materials still make a tolerance necessary. Prior to this technique, visually detectable mismatching could occur occasionally. Often this will not be visible until the paint has weathered for some time, but with the Chrysler technique all paint must be the same.

Another problem is scheduling colors. At Chrysler, fenders and hoods were painted after the bodies were built. To give this nec-

Headed for a Crash

Full-scale car crash tests and evaluation studies are made by the Ford engineering staff at its Dearborn, Mich., test track as part of a concerted safety program. Already established: Safety belts reduce injuries. There is less chance of injury when the motorist is held in his seat and inside the car. Ford made safety belts optional equipment. Nylon-cotton belts are 4-in.-wide

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)

essary time for painting, a bank of bodies was required which is eliminated by the new method. Then, too, a bank of 19 hoods and 38 fenders was required which could be fed to the line. This bank is eliminated.

No Damage—Feeding the fenders and hoods to the line is no small problem, either. It's hard to think of many things more susceptible to damage in handling than hoods and fenders. Their size and awkward contours, coupled with their highly polished surfaces, make accidents common despite the best safeguards. With this new technique, ten handlings are saved on the hoods and fenders, and they don't have to swing precariously around the plant on conveyors.

One particularly precarious spot is the point of front end assembly in most auto plants. Here the fenders are removed from the conveyors and loaded onto assembly fixtures with such items as the radiator shell, grille, headlights, etc. This is usually performed on a merry-go-round next to the final assembly line, the finished unit then being lifted off and deposited on the appropriate car passing by. With space particularly at a premium in the final assembly area, elimination of this merry-go-round is in itself an important step. Thanks in part to this saving, a five-day supply of parts now can be stored in about 80 per cent of the cases.

Virtues—In somewhat the same way, hoods which formerly were carried by conveyor to the point of assembly on the final line now will travel with the car and no scheduling of these components by color will be required, in addition to the already cited virtue of reduced handling of the finished part.

In short, Chrysler has in principle eliminated a series of operations from its car-building process together with several miles of conveyor and duplicate facilities. But while this new "as-a-unit" painting technique may get the headlines, plenty of other important changes have taken place.

Other Changes—A major difference is the elimination of the trucks which used to haul the bodies from the body plant to final assembly across busy Jefferson avenue. These have been replaced with a conveyor, and the plants have been rearranged so that the idle travel distance is only a few hundred feet. This is part of a 14-mile continuous conveyor system which moves through three plants and can carry 2,304,000 lb of Chryslers every 16 hours. Fifty automatic transfer devices at junction points in the system take out much of the former heavy work.

Overhead type conveyors in the frame and chassis assembly and body hardware sections allow completely unobstructed floor areas and ready access for workers. In fact, the entire work flow in the plant is being rearranged around the new body facility for increased efficiency, with the 14-mile long conveyor, reportedly longest in the industry, tying the unit together.

A Lot of Color—The new body-finishing department provides for simultaneous painting with 25 different colors. This is made possible through use of 58 special tanks of 55 gallon capacity which are operated through 16 miles of pressurized paint lines. These lines alone hold 5400 gallons of paint, some 1800 gallons more than the 3600 gallons of paint required by the 15 new automatic painting machines in a 16-hour work day.

Paint spraying booths have a combined length of 790 ft, and the painting division has tile walls for maximum cleanliness with regular cleaning procedure. Total length of paint-baking ovens in the new plant is 4705 ft to assure each body finish is baked at 250° F for at least 37 minutes.

The Little Things—Another assembly technique new to Chrysler is the installation of cushions and other interior appointments after the cars leave the final assembly line, the advantage being to minimize dirtying during assembly. Also newly contributing to quality will be four opportunities for body paint repair compared with two previously. Imperial capacity will be increased to 400 cars daily, and these bodies will go down their own finishing line where custom finishing can be employed.

With the addition of its $20-million body plant, revisions in plant layout and its startling "as-a-unit" painting technique, there seems considerable justification for the statement of E. C. Quinn, Chrysler division's president, that "this plant sets new standards of performance in this industry."

It is quite possible that other manufacturers will go to the Chrysler method of building cars, and that visible joints of the fenders with the body will be eliminated in the front just as they are at the rear. But likely never to be answered is the question: Why didn't somebody think of it before?

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031†	635,540
July		543,540
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,896,874

Week Ended	1955	1954
June 18	178,475	140,063
June 25	191,890	140,695
July 2	195,071	133,141
July 9	167,288	106,169
July 16	206,708	130,757
July 23	195,000*	130,744

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Ford Offers Seat Belts

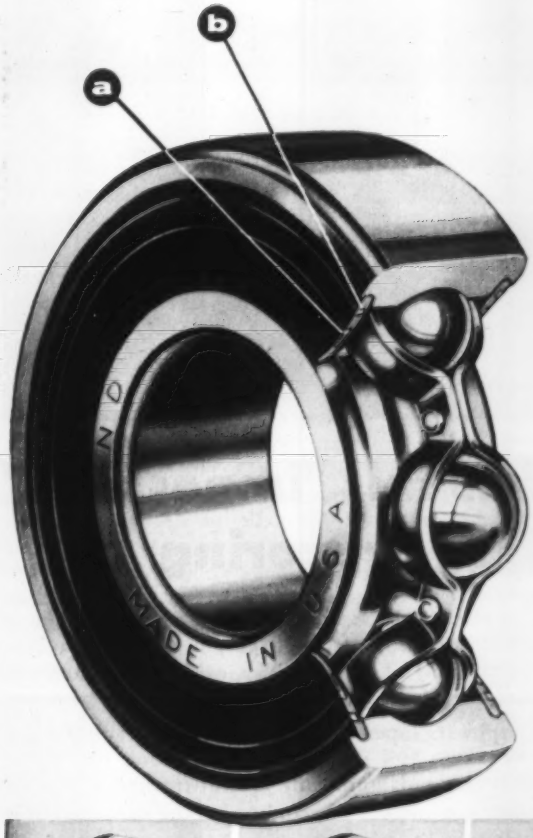
Ford Motor Co. announces seat belts are now available for all 1955 products as a dealer installed option at $11.95 per belt. This follows by a couple of months Chrysler Corp. announcement that it was making seat belts available to motorists who desired them.

The decision to offer the accessories follows research by Ford (photo, page 55), including full-scale crash tests using lifelike dummies which revealed there is less chance for injury when a motorist is held in his seat and kept within the protective enclosure of the vehicle.

FACTS

about

NEW DEPARTURE
BALL BEARINGS



New Sentri-Seal...on guard against dirt and wear!

The unique design of the Sentri-Seal gives optimum protection against dirt, and includes a number of other major advantages.

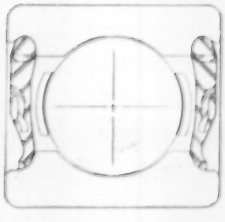
Sentri-Seals are quickly removed, easily replaced. As the seal is of synthetic rubber, in which two metal rings are embedded, a constant-rate spring is created between the rings. Inherent flexibility prevents distortion of the bearing outer ring due to seal insertion, permitting the use of bearings to the higher accuracy specifications. The spring action maintains an efficient sealing contact with the bearing ring to bar dirt and retain lubricant. Sentri-Seals are relatively inert to oils and greases and operate satisfactorily through a temperature range of −40°F to 225°F. Specifications available for still higher temperatures. In applications where relubrication is desired, it is easily accomplished by the injection method.

The New Departure Sentri-Seal basically consists of two separate metal rings, "A" and "B", embedded in synthetic rubber, resulting in a spring which absorbs distortion and deflection. The seal is not drastically influenced by axial displacement due to bearing end-play within prescribed tolerances, and provides efficient sealing at low torque. Bearing shown is equipped with two seals.

ONE SENTRI-SEAL | SEAL AND SHIELD | SEAL AND SNAP RING | TWO SEALS AND SNAP RING | SEAL, SHIELD AND SNAP RING

The diagram shows in section the New Departure Sentri-Seal. Lip contacting surfaces are form-ground simultaneously with the ball race, giving an extremely high degree of concentricity between sealing surfaces and the raceway.

Sentri-Seal is available for a range of sizes in single-row, standard-width bearings and also in two types of New Departure adapter bearings. Sizes, dimensions and capacities are listed in the latest New Departure catalog.



Write for full details on Sentri-Seal

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

Graph-Mo® steel die makes this "impossible" draw without galling or scoring

MANUFACTURERS Service Company in Cleveland was faced with a tough problem of making a die for a dryer fan housing 3⅛" deep. The scroll shape made it an all but impossible draw for ordinary die steels—they'd pick up and gall. Looking for an answer, they tried Graph-Mo®—one of four graphitic tool steels developed by the Timken Company. Result: good clean parts, no scuffing, no galling, no scoring.

Graph-Mo tool steel can handle jobs like this because of its unique composition. It contains free graphite, one of the best natural lubricants. This graphite gives Graph-Mo outstanding anti-friction properties and prevents scuffing and galling even in such difficult draws as this one.

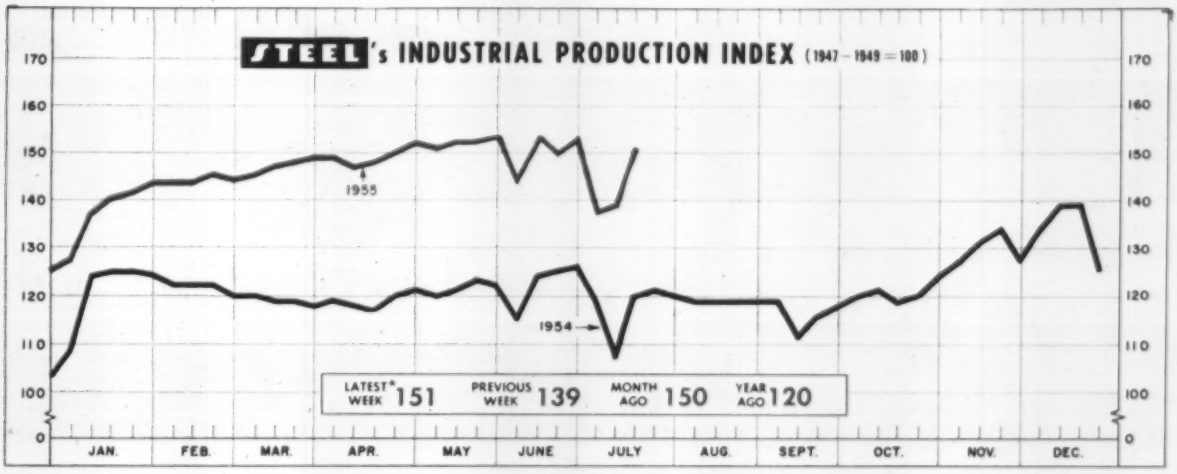
Graph-Mo has a second great advantage over conventional tool steels: It outwears them on an average of three to one. Along with the graphite, Graph-Mo contains millions of tiny particles of diamond-hard carbides, one of the hardest-wearing substances known.

Despite its superior wear resistance, Graph-Mo machines about 30% easier than conventional tool steels. And it responds uniformly to heat treatment, thus requiring a minimum of grinding on the hardened dies.

Graph-Mo is one of four graphitic tool steels developed by the Timken Company. Would you like more information about their uses in dies, punches, gages and machine parts? Write for the new Timken Graphitic Steel Data Book just out. The Timken Roller Bearing Company, Steel & Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended July 16. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Metalworking Spearheads Business Gains

BUSINESS has come a long way in a year. Use almost any standard of measurement and, except in a few scattered instances, you'll find gains of 5 to 10 per cent—sometimes more. All in all, 1955 is stacking up as a record year.

Take industrial production as measured by the Federal Reserve Board's unadjusted index. In June it hit 138 (1947-1949=100) for the third straight month. A year ago it was only 124.

Gains—The rise in metalworking industries is even more striking. Here's a comparison of June figures for this year and last:

(1947-1949=100)	1955*	1954
Durable goods	153	135
Consumer durables	142	116
Autos	183	143
Primary metals	138	109
Metal fabricating	163	147
Machinery	151	137

* Preliminary

Indexes for July will drop as vacations and hot weather slowdowns take their toll, but that's nothing unusual for the time of year. August output may not show the usual jump, with auto model change-overs the factor holding it down. But by September everything should be back in high gear again.

More Workers—In employment, the picture is much the same. More people were working in June than ever before, say the Commerce and Labor departments.

There were 64 million civilian workers, 4 million above the winter low point. That means employers took on about 1 million more new workers than usual in the first half of the year.

Below Peak—Manufacturing employment was one of the plus factors. Here, too, metalworking was one of the big guns. Increases were marked up in primary metals, metal fabricating, machinery and electrical machinery. Indicating that the peak of the auto season is over, transportation equipment employment dropped.

In spite of big recent gains, manufacturing employment is still

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,276[1]	2,202	1,557
Electric Power Distributed (million kw-hr)	10,040[1]	9,759	8,951
Bitum. Coal Output (1000 tons)	7,350	2,180	5,348
Petroleum Production (daily avg.—1000 bbl)	6,603[1]	6,597	6,298
Construction Volume (*ENR*—millions)	$578.4	$378.9	$431.1
Automobile, Truck Output (*Ward's*—units)	206,708[1]	167,288	130,757
TRADE			
Freight Car Loadings (1000 cars)	760[1]	653	695
Business Failures (Dun & Bradstreet, no.)	212[1]	204	226
Currency in Circulation (millions)[3]	$30,416	$30,298	$29,981
Dept. Store Sales (changes from year ago)[3]	+13%	+5%	−16%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,622	$18,281	$19,297
Federal Gross Debt (billions))	$274.3	$274.4	$271.0
Bond Volume, NYSE (millions)	$20.4	$17.0	$22.4
Stocks Sales, NYSE (thousands of shares)	11,607	11,565	12,826
Loans and Investments (billions)[4]	$84.1	$84.5	$81.1
U. S. Govt. Obligations Held (billions)[4]	$31.8	$32.1	$33.6
PRICES			
STEEL's Finished Steel Price Index[5]	207.76[1]	207.76[1]	195.87
STEEL's Nonferrous Metal Price Index[6]	239.4	238.9	215.6
All Commodities[7]	110.3	110.0	110.2
Commodities Other than Farm & Foods[7]	116.2	115.8	114.2

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

LIFE STEPS UP AT 40!

FORTY YEARS 1915 - 1955 DE-STA-CO QUALITY STAMPINGS

Sure we've been making stampings for 40 years! . . . But we're going up the hill faster than ever!

Expanded facilities! . . . Newer equipment! . . . Wider diversification! . . . Even more customers—and from every major industry!

The mere fact that we're the nation's best-known job stamping manufacturer . . . shows how we've progressed.

Now . . . as our life steps up at 40 . . . would be a good time to let us do a bang-up job for you, too!

DETROIT STAMPING COMPANY

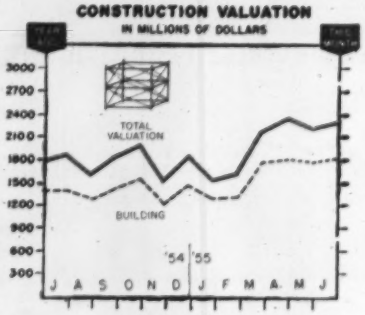
DE-STA-CO

359 Midland Ave., Detroit 3, Mich.

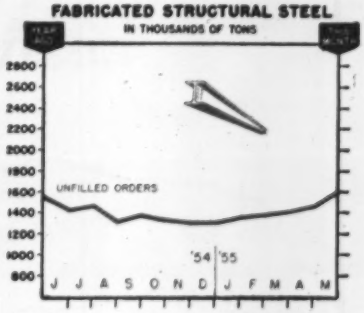
America's Best-Known Job Stamping Manufacturer

THE BUSINESS TREND

CONSTRUCTION VALUATION
IN MILLIONS OF DOLLARS



FABRICATED STRUCTURAL STEEL
IN THOUSANDS OF TONS



37 States

	Total		Building	
	1955	1954	1955	1954
Jan.	1,504.5	1,151.9	1,255.1	935.6
Feb.	1,581.1	1,221.3	1,278.6	977.5
Mar.	2,134.8	1,527.5	1,748.6	1,199.8
Apr.	2,322.1	1,691.9	1,776.1	1,401.6
May	2,185.1	1,925.3	1,737.1	1,497.6
June	2,255.2	1,733.3	1,793.7	1,376.7
July	.....	1,836.9	.....	1,386.9
Aug.	.....	1,672.9	.....	1,243.3
Sept.	.....	1,816.2	.....	1,424.2
Oct.	.....	1,965.3	.....	1,522.8
Nov.	.....	1,498.9	.....	1,199.8
Dec.	.....	1,828.8	.....	1,463.0
Total	.....	19,770.2	.....	15,628.8

F. W. Dodge Corp.
Charts copyrighted, 1955, STEEL.

	Shipments		Backlogs	
	1955	1954	1955	1954
Jan.	225.8	245.6	1,346	1,686
Feb.	213.4	253.1	1,360	1,697
Mar.	227.8	285.4	1,392	1,645
Apr.	239.7	293.5	1,444	1,566
May	223.2	253.9	1,592	1,490
June	....	290.3	....	1,391
July	....	265.2	....	1,429
Aug.	....	272.5	....	1,270
Sept.	....	265.4	....	1,329
Oct.	....	258.4	....	1,294
Nov.	....	228.7	....	1,280
Dec.	....	223.5	....	1,291
Total	....	3,135.5		

American Institute of Steel Construction.

about 600,000 below the 1953 peak. Part of the explanation lies in the length of the workweek, 40.7 hours in June. That only matches the 1953 record for the month; but for work stoppages in the auto industry during labor contract negotiations, a new high would have been set.

Average weekly pay of $76.11 set a record for June. It was 19 cents under the May level, again because of the auto industry situation and its effect on other industries.

Cleanup Time for Autos . . .

This is the time of year for guessing games about the auto industry. Can the dealers get rid of their stocks before the new models come out?

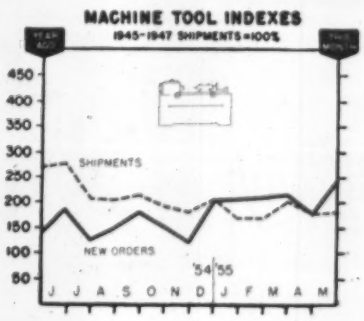
Prospects for an orderly cleanup have grown stronger, says *Ward's Automotive Reports*. That estimate is based on: 1. Assurance of some General Motors Corp. dealer personnel by the factory that they will be allowed a cleanup session that will not jeopardize 1956 model sales. 2. Inventories of most low and medium-priced cars are considerably below the 25.7-day industry average of June 30. 3. Producers with the heaviest dealer stocks are scheduling the longest changeover periods.

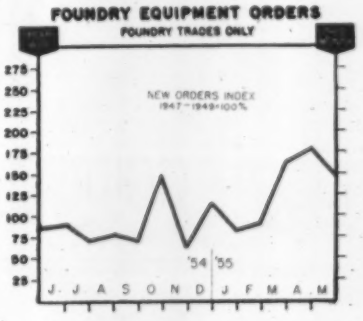
The crux, though, is the sales situation, and it's hard to pick out any kind of pattern. GM, for example, says its sales for the first ten days of July set a record for that period. But the 11,430 daily rate was well below the 13,062 of the first ten days of June. Sales at Ford, on the other hand, were 20 per cent higher in the July period than a month earlier. That, too, could be misleading, because Ford sales in early June were below normal.

Dealer Inventories . . .

In any case, GM and Ford seem to be in the best inventory position. Between them, they're accounting for nearly 78 per cent of sales and holding but 60 per cent of the estimated 675,000-car stockpile, about a 20-day supply.

Chrysler dealers aren't so well off, reportedly having a 35-to-40 day inventory. Even so, they're likely to be in good shape by the time 1956 models come out. The corporation is aiming at only 10 to 12 per cent of total industry production in the third quarter, even though their 18-per-cent share of sales seems to be holding up. Also,





	New Orders 1955	New Orders 1954	Shipments 1955	Shipments 1954
Jan.	203.0	173.5	167.3	319.4
Feb.	209.4	159.8	168.2	323.1
Mar.	214.6	169.6	202.5	327.2
Apr.	178.1	142.8	180.1	302.7
May	244.0*	139.5	180.7*	270.3
June	....	185.2	....	276.3
July	....	124.7	....	205.7
Aug.	....	147.9	....	203.7
Sept.	....	180.9	....	213.4
Oct.	....	148.9	....	191.0
Nov.	....	119.5	....	179.5
Dec.	....	202.9	....	203.4

*Preliminary.
National Machine Tool Builders' Assn.

	1955	1954	1953
Jan.	81.0	173.8	99.6
Feb.	90.4	99.9	97.5
Mar.	163.6	82.7	132.2
Apr.	178.6	125.3	111.8
May	145.7	80.8	182.1
June	....	86.4	156.4
July	....	68.8	158.9
Aug.	....	75.6	235.5
Sept.	....	68.3	127.7
Oct.	....	147.6	87.1
Nov.	....	61.4	149.4
Dec.	....	113.9	160.8

Foundry Equipment Mfrs. Assn.

change-over down time in Chrysler plants is expected to run over two months, compared with only about 6 weeks at Ford and GM.

The Independents apparently are having more serious problems, with stocks of some makes up over a 50-day supply.

Construction Climbs . . .

Construction continues its merry way. Contract awards for heavy construction were $578 million in the latest week reported by *Engineering News-Record*, well above any other week of the current construction boom. Volume is 37 per cent ahead of last year's and 24 per cent above the former record year, 1953.

Private building had its second biggest week this year, $372 million. Industrial contracts hit a high for the year, $113 million, one of the reasons for this week's high total. The surge in the industrial category in recent weeks (STEEL, July 18, p. 71) has shoved awards to almost $1.5 billion, 45 per cent above last year's and close to the high levels of 1952 and 1953.

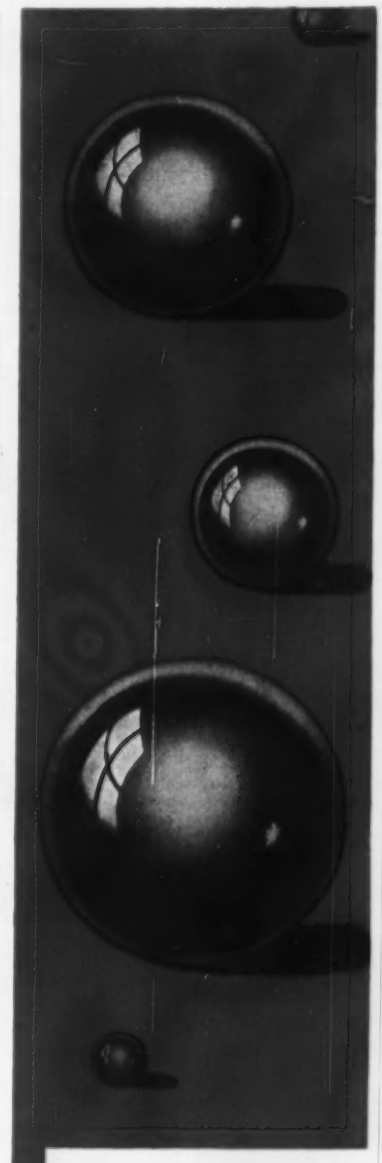
Public works also had their biggest week of the year. State and local awards were up sharply. Highways accounted for a good share of the gains as they scored their second best week of 1955 with $62 million.

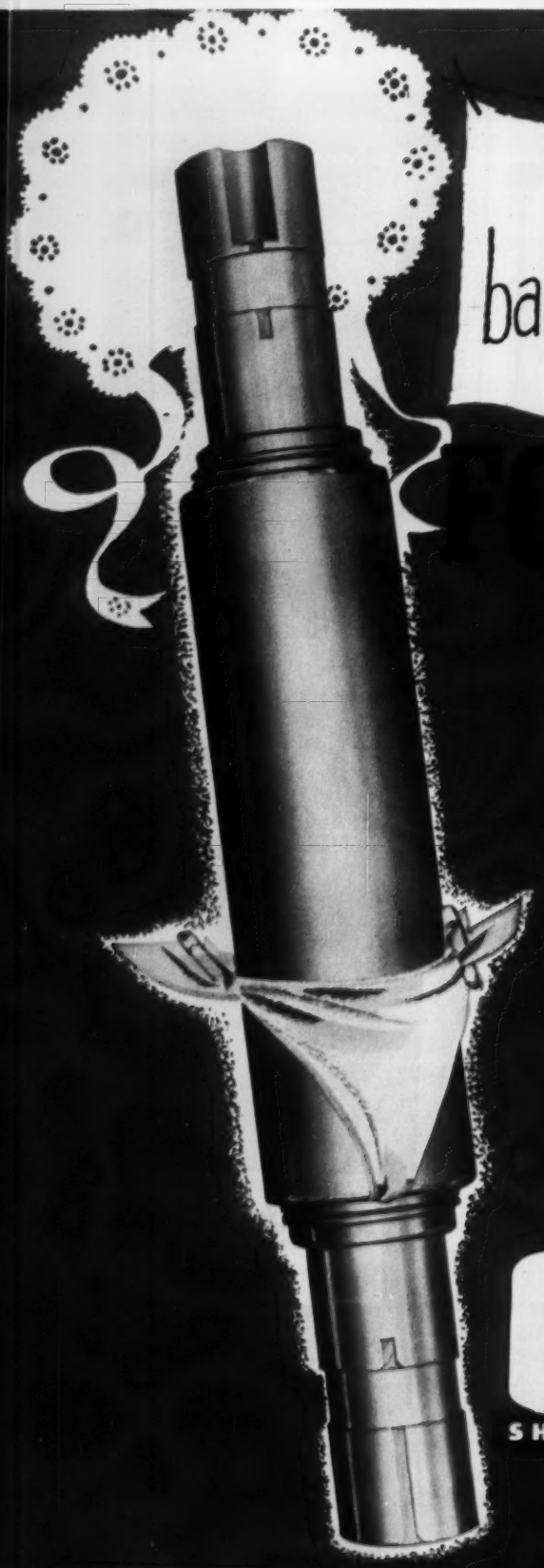
Demand for new homes is holding up well and is absorbing the near-record building pace, says Commerce Secretary Sinclair Weeks. Overbuilding is confined to a few localities. Preliminary results of a Commerce department survey show vacant housing last quarter was only 2.2 per cent of all dwelling units in the country, compared with 1.6 per cent in 1950 when housing was in decidedly short supply.

Freight Car Revival . . .

Freight car orders of 13,365 in June were highest for any month since February, 1951. Only 3041 cars were ordered in May, only 1139 in June last year. Backlog as of July 1 was highest since February, 1953—27,102 cars, compared with 16,886 a month earlier . . .

"Prospects for carbuilding look better than they have for several years," Charles J. Hardy Jr., chairman, ACF Industries, told stockholders. "It is reported reliably, that the Class I roads are thinking in terms of orders for 40,000 new freight cars within the present year."





baby doing nicely thank you!

FORGED ROLLS

The Ohio Steel Formula for Blue Ribbon Rolls

HARDNESS
STRENGTH
UNIFORMITY
CONSISTENCY

Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • Plants at Lima and Springfield, Ohio

G. L. McMILLIN
. . . Canadian Car & Foundry v. p.

G. L. McMillin was elected vice president, steel foundry, **Canadian Car & Foundry Co. Ltd.**, Montreal, Canada. He was assistant vice president.

B. W. Swanson was made general manager and **R. W. Grady** sales manager-small tools for **Hanson-Whitney Co.**, division of Whitney Chain Co., Hartford, Conn.

Merrill A. Young was named works manager and **John L. Fuller** fills the new post of director of engineering at **Marquette Metal Products Co.**, Cleveland. **Jerry Gleitz** was made manufacturing engineer.

John W. Spoor joined **Power Products Corp.**, Grafton, Wis., as general sales manager. He was assistant general manager, welding division, A. O. Smith Corp.

Joseph W. Chanda was made tubular products sales manager, eastern district, for **A. O. Smith Corp.** He is at New York.

John R. Howland was named general sales manager, Dage Television Division, **Thompson Products Inc.**, at Michigan City, Ind. He formerly headed product research and commercial sales for the electronic division of Stewart-Warner Corp. **Larry H. Kline** fills the new post of manager of commercial product sales for the electronics division of Thompson Products.

CHARLES J. WALLACE
. . . Houdaille-Hershey of Indiana v. p.

Charles J. Wallace was elected vice president and general sales manager, **Houdaille-Hershey of Indiana Inc.**, Lebanon, Ind. He was formerly in Detroit with the parent company, Houdaille-Hershey Corp.

Dr. Carl B. Post, head of the metallurgical and research departments at **Carpenter Steel Co.**, Reading, Pa., was promoted to vice president-metallurgy. **H. Sturgis Potter**, vice president-sales, and **Arlington A. Britton Jr.**, vice president-production, were elected to the board of directors. **Berton H. DeLong** retired from the board.

F. J. Sikorovsky was named general manager, tap division, **Wood & Spencer Co.**, Cleveland. For the last five years he was executive vice president of Avildsen Tools & Machines Inc. and previously was vice president, Greenfield Tap & Die Corp.

James Flett Organization elected **Gerald E. Franks** a director and vice president. He is also manager of the Chicago branch. Mr. Franks assumes the director's duties of **Hugh R. Littell**, who retired as a director and vice president-operations.

T. A. Bedford, an executive with various Kaiser affiliated companies for the last 23 years, joined **Kaiser Engineers Division**, Oakland, Calif., as vice president.

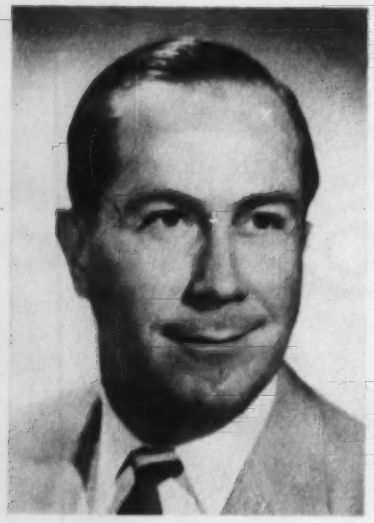
F. J. GEIGER
. . . mgr. at Allis-Chalmers Norwood Wks.

F. J. Geiger was made general manager of **Allis-Chalmers Mfg. Co.'s** Norwood, O., Works. He succeeds **P. F. Bauer**, recently named general manager of the company's industrial equipment division. Mr. Geiger was manager of sales and engineering, electrical section, Norwood Works, since 1944.

James W. Reed was made Pacific Coast manager of **Cooper-Bessemer Corp.**, in charge of offices in Los Angeles, San Francisco and Seattle. He replaces **John Rogers**, now special representative and consultant. Mr. Reed, a vice president since 1947, has been New York district manager of compressor and stationary engine sales since 1940.

Carl J. Meister, vice president-sales, was named executive vice president and assistant general manager of **Atkins Saw Division**, Indianapolis, Borg-Warner Corp. **Robert M. Zimmerman**, general manager-operations, was named vice president - manufacturing. **Howard O. Wiesen** was promoted from assistant to the president to vice president, administration.

George H. Brodie was made vice president and general manager of a new division at **Studebaker-Packard Corp.**, Detroit, co-ordinating government and industrial programs. He will direct division activities, including engineering, procurement and manufacturing, in



WILLIAM E. HORENBURGER

KENNETH R. COWAN

. . . Aetna Ball & Roller Bearing sales and plant manager

addition to research, government and industrial product sales, contract administration and contract co-ordination.

William E. Horenburger was made sales manager and **Kenneth R. Cowan** plant manager, **Aetna Ball & Roller Bearing Co.**, division of Parkersburg-Aetna Corp., Chicago. Mr. Horenburger was with Thomson Industries Inc.

Donald G. Wright was made sales manager, appliance and furnace sales divisions, **Perfection Industries Inc.**, Cleveland. He assumes duties of **J. H. Rasmussen**, who retired as vice president and director of appliance sales. **Phillip J. White** was made sales manager, refrigeration contract division.

Thomas E. Berry was named assistant to the general sales manager of **DeWalt Inc.**, Lancaster, Pa.

William C. Foster, who resigns July 31 as president of Manufacturing Chemists' Association Inc., was elected executive vice president of **Olin Mathieson Chemical Corp.**, New York.

J. Earl Steinhauer was made assistant to the general manager of **Fairchild Aircraft Division**, Fairchild Engine & Airplane Corp., Hagerstown, Md. He is succeeded by **Robert W. Martz** as manager of plant operations.

Harry R. Cole was made works manager of the St. Louis car plant of **American Car & Foundry Division**, ACF Industries Inc.

Adolf A. Widmann was elected vice president-engineering, **National Machine Products Co.**, Utica, Mich.

Raymond I. Bond was made purchasing agent of **Veeder-Root Inc.**, Hartford, Conn.

Russell, Burdsall & Ward Bolt & Nut Co. named **Lambert M. Kaspers** manager of its Rock Falls, Ill., plant and **Robert J. McCombs** plant manager at Coraopolis, Pa. Mr. Kaspers, formerly Coraopolis plant manager, succeeds **William H. Hoofstitler**, retired. **William C. McIlvain** succeeds Mr. McCombs as plant superintendent at Coraopolis.

Rotary Electric Steel Co., Detroit, added **Thomas G. Kuzma** and **Raymond K. Dykema Jr.** to its home office sales staff. **David L. Cooke** transferred from Detroit to the Newark, N. J., sales office.

Chance Vought was made director of sales, aircraft division, **White Industries Inc.**, subsidiary of Mack Trucks Inc., New York.

Walter J. Niles was elected president, treasurer and director of **Kraus Automatic Machines Corp.**, Rochester, N. Y., and its two subsidiaries. **Charles E. Kraus**, former administrative and engineering head of the firm, will devote full time to engineering and development.

V. G. Mulligan was made general sales manager of **Driv-Lok Pin Co.**, Chicago.

Thomas J. Kniff Jr. was made central district manager at Detroit for **Kennametal Inc.** He succeeds **Gilbert A. Bunn**, assigned to the home office in Latrobe, Pa. **Earle Boyer** was made Cleveland district manager.

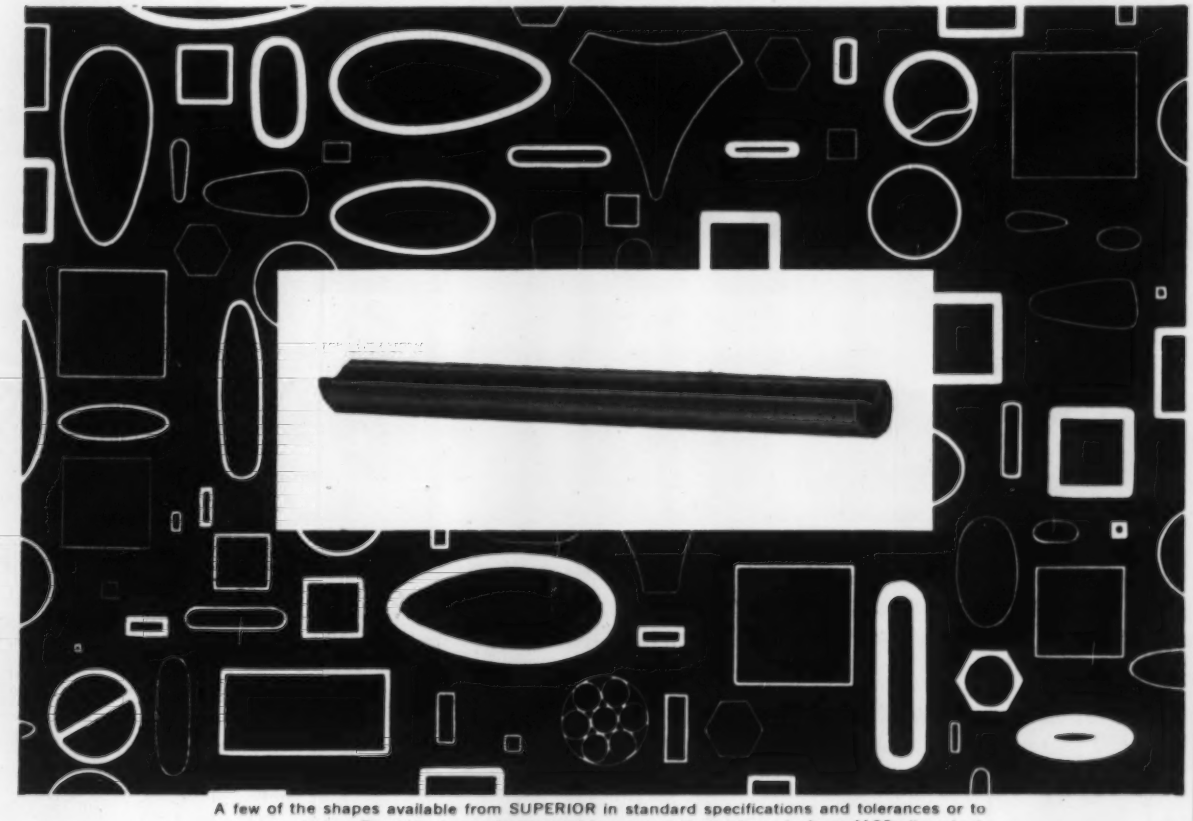
Douglas C. Lance was made sales promotion manager, **Axelson Mfg. Co.**, division of U. S. Industries Inc., with offices in Los Angeles.

Byron W. Brown was made sales

LAMBERT M. KASPERS

ROBERT J. McCOMBS

. . . plant managers at Russell, Burdsall & Ward Bolt and Nut



A few of the shapes available from SUPERIOR in standard specifications and tolerances or to your own design. The tube in the foreground is a gun drill shank made from 4130 alloy steel.

Save time and money on special shaped tubing

"SUPERIOR" TUBING IS IMMEDIATELY AVAILABLE IN A WIDE RANGE OF SHAPES, FORMS, ALLOYS

Many manufacturers have discovered that SUPERIOR's ability to supply as standard what many firms consider specialty tubing saves them trouble, time and money. SUPERIOR makes round, square, oval, rectangular, elliptical and flat oval tubing, for instance. It makes capillary tubing, pointer tubing, electronic tubing, telescopic sizes, large OD-light wall tubing. Over 55 analyses are available in carbon, alloy and stainless steels; in nickel and nickel alloys; in beryllium copper, titanium, zirconium.

The gun drill shank shown above and on the right is a good example of SUPERIOR's ability to supply unusual shapes. This newly rediscovered method of producing close-tolerance high-finish holes demands straight, rigid, accurate shanks with a 110° V-groove. SUPERIOR can produce such a shape—and others—in a fraction of the time and cost it would take a customer to form his own.

If you're having difficulty getting the kind of tubing you want, SUPERIOR can undoubtedly help you. Write for your free copy of Bulletin 40—*A Guide to the Selection and Application of Superior Tubing*. SUPERIOR TUBE COMPANY, 2005 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.

Turks-head rollers converting a round section of SUPERIOR tubing into the typical elliptical shape for a Bourdon gage tube.

Gun drills can produce holes from 4 to 230 diameters or more in 4 times the speed of conventional drilling methods or better. Holes so produced are straight and round to tolerances of 0.0002" or less and wall finishes are 7 mu-in or better.

All analyses available in .010" to ¼" OD; certain analyses in light walls up to 2½" OD

Superior Tube

The big name in small tubing

WALTER J. BEMB
. . . Aluminum Industries v. p.

WILLIAM L. WALSH
. . . heads Quebec Iron & Titanium Corp.

JOSEPH J. JENKINS
. . . div. sales mgr. at Lincoln Eng.

manager, radiometric division, **Hoffman Electronics Corp.**, Los Angeles.

Walter J. Bemb was made vice president-customer relations of **Aluminum Industries Inc.** at Detroit. He was with Houdaille-Hershey Corp., since 1947 as vice president and a director.

Milburn V. Mills, assistant general superintendent, **Green River Steel Corp.**, Owensboro, Ky., was promoted to general superintendent. **William H. Meyer**, plant metallurgist, was made chief metallurgist.

R. D. Friedlander was made general sales manager, **Diesel Energy Corp.**, New York.

Gen. Charles L. Bolte, U. S. Army, ret., joined **ACF Industries Inc.**, New York, as special assistant to the chairman.

William L. Walsh was elected president of **Quebec Iron & Titanium Corp.**, New York, which is two-thirds owned by Kennecott Copper Corp. and one-third by New Jersey Zinc Co. Dr. Walsh joined the Kennecott organization in April as assistant to the president in the field of the corporation's titanium interests. He had been with General Aniline & Film Corp.

Hugh Kenworthy, former purchasing agent, Lukens Steel Co., joined **R. L. Batteiger Co.**, Philadelphia, as vice president. He succeeds **Arthur R. Robinson**, resigned.

Dodge Steel Co., Philadelphia, appointed **Morris E. Neely Jr.** sales manager.

Cambridge Wire Cloth Co., Cambridge, Md., appointed **J. L. McCandless** special sales engineer for its new gripper sling department.

Lincoln Engineering Co., St. Louis, appointed **Joseph J. Jenkins** sales manager, industrial division. He has served the company for 15 years.

Bertram W. Mahoney was made general manager of **General Electric Co.'s** industry control department at Philadelphia. He succeeds **C. A. Salmonsen**, assigned to special projects with the company.

Wilfred F. Dittgen, who recently joined **Midvale Co.**, Philadelphia, was made plant engineer. He had been manager of tools and methods at Pullman Standard Car Mfg. Co.

Lester W. Evers was made assistant vice president, Chicago operations, **Hubbard & Co.**

Eaton Mfg. Co. appointed **Earl W. Beyerlein** casting buyer for its axle division at Cleveland and its forge division at Marion, O.

OBITUARIES . . .

Harold D. Neill, 50, vice president-sales, **Armco Drainage & Metal Products Inc.**, Armco Steel Corp., Middletown, O., died July 13.

John N. Fauver, president, **J. N. Fauver Co. Inc.**, Detroit, died July 6.

Thurlow Travis, 46, manager of the materials department in the allied products division of **Carrier Corp.**, Syracuse, N. Y., died July 5.

Myer W. Singer, president of **Forbes Steel Corp.**, Canonsburg, Pa., died recently.

Harold T. Dow, 65, former president, **Spring Perch Co. Inc.**, Lackawanna, N. Y., died July 9.

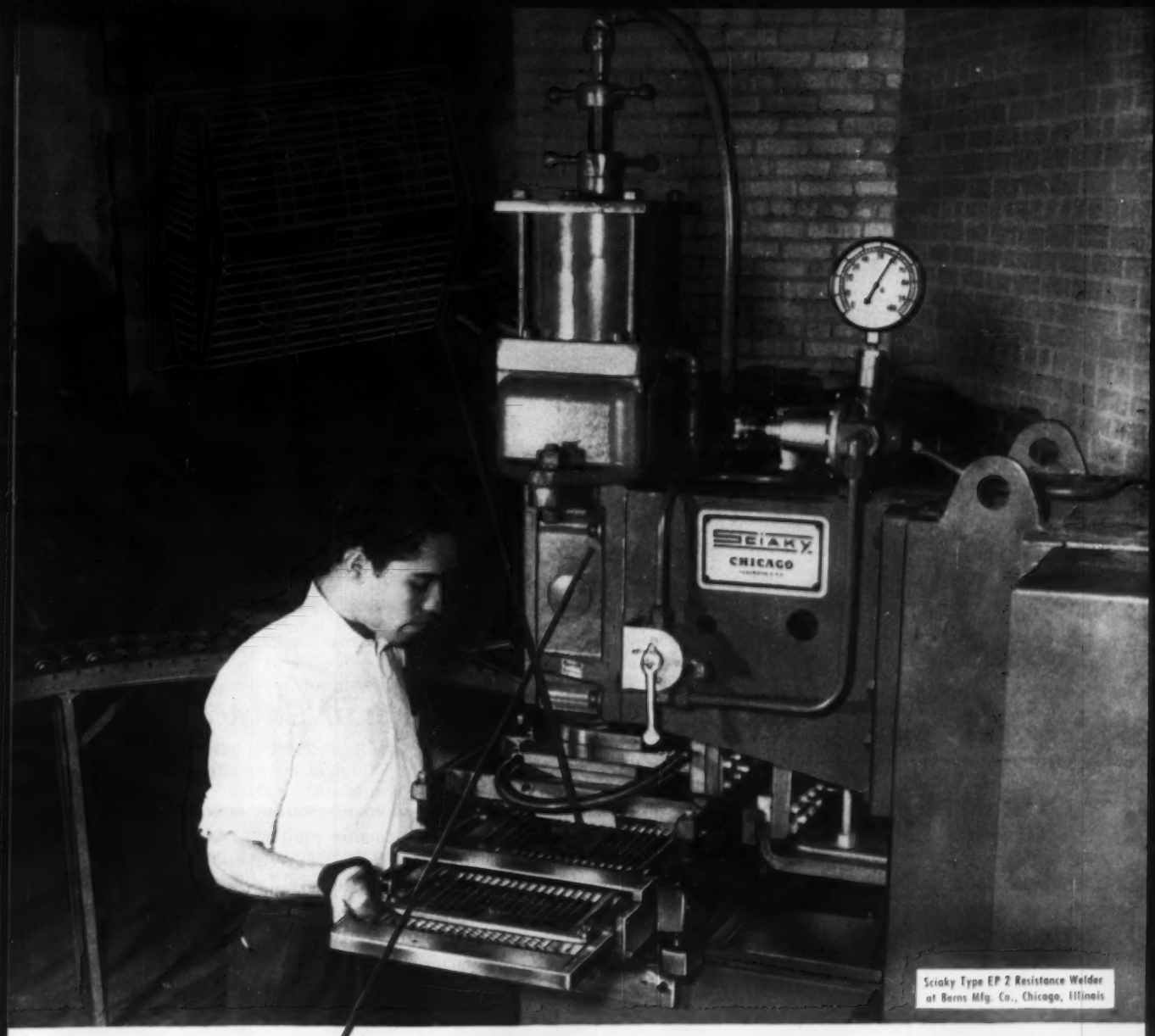
D. Angus Currie, 68, chairman and treasurer, **Erie Foundry Co.**, Erie, Pa., died June 25.

Henry Y. Walker, retired president, **American Smelting & Refining Co.**, died July 3 in Palo Alto, Calif.

Burke Patterson, 58, assistant to the president at **Thompson Products Inc.**, Cleveland, died July 10.

Harold E. Hall, 45, president, **Metals Disintegrating Co. Inc.**, Union, N. Y., died July 8.

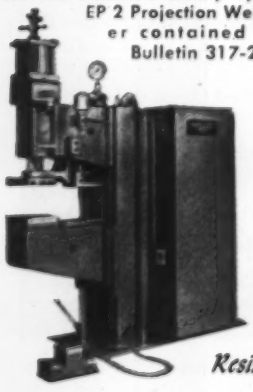
Joseph R. McDonnell, 55, Cleveland district manager, **Luria Steel & Trading Corp.**, died July 8.



Sciaky Type EP 2 Resistance Welder at Berns Mfg. Co., Chicago, Illinois

NEW SCIAKY DESIGN . . . COMPETITIVELY PRICED

Write for complete specifications showing minimum to maximum welding capacities for the standard Sciaky Type EP 2 Projection Welder contained in Bulletin 317-2.



PRODUCTION JUMPS 420% . . .

One Standard Sciaky Welder Does the Work of Four!

With one welder Berns was producing only one-quarter the needed production of 29 piece, 10 gauge wire grills for their nationally known Air King Fan. Instead of selling three more machines, Sciaky provided the newly designed, standard EP 2 Welder equipped with simple tooling to replace the original machine. Production jumped 420% as one machine does the work of four plus, the customer has the original welder for other work.

Write for the complete details of Berns' impressive production increase and equipment savings as well as other similar examples of single welder applications contained in "Resistance Welding at Work", Vol. 4, No. 1.

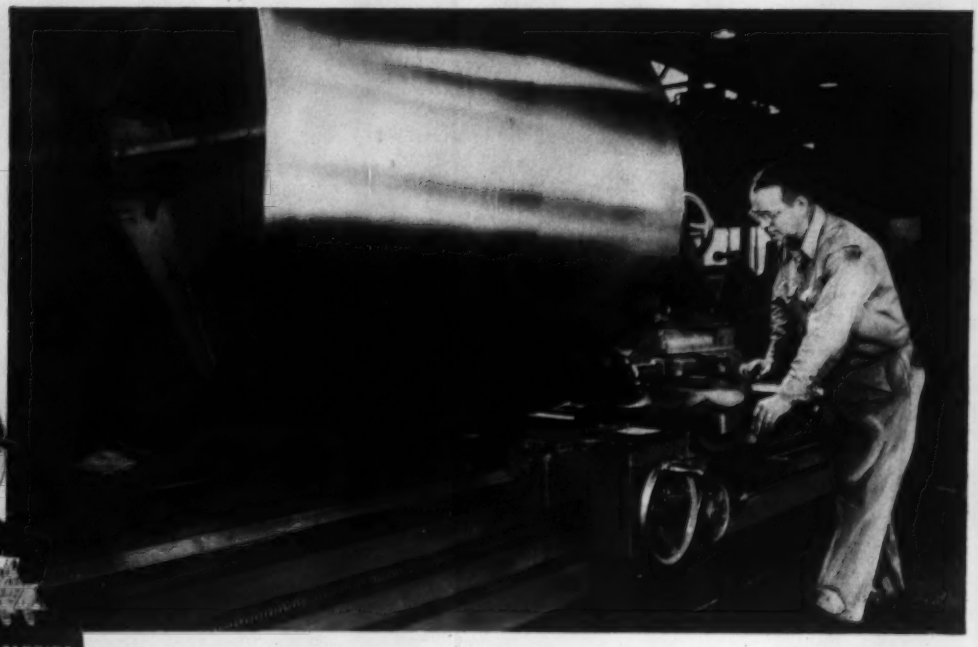
These typical advantages of Sciaky resistance welding may well be applied to your fabricating operations. Welders designed to do *more useful work* at *lower operating cost* with *maximum reliability* is basic to Sciaky design.

Largest Manufacturers of Electric Resistance Welding Machines in the World

SCIAKY

Sciaky Bros., Inc., 4909 West 67th Street, Chicago 38, Illinois

Photo, courtesy Commercial Machining Company, Conway, Pa. Turning 60" dia. stainless steel looping line roll.



Mr. Tooley Says:

"There's more than one way to skin a cat"

CIRCLE "C"

SUPER HIGH SPEED STEEL

- Operating speeds 25%—50% faster than ordinary high speed steels
- Longer tool life
- Cuts costs by increasing production
- Particularly suitable for cutting tough alloy and stainless steels

FIRTHITE

STANDARD TIPS, TOOLS, INSERTS AND HOLDERS

- Highest metal removal rate
- Uniform, dependable Firthite quality and performance
- Large stocks of standard tools and tips for immediate delivery
- Mechanically-held and brazed designs

Yes, in the field of tooling, alternative cutting materials make it possible to utilize the same production equipment for a variety of applications. In typical turning operations either Firth Sterling High Speed Steel or Firthite Sintered Carbide cutting tools may be selected . . . depending upon the characteristics of the metal and the production requirements of the job.

Firth Sterling, manufacturers of complete shop tooling needs, occupies the unique position of providing *both* steels and carbides to "skin the cat" of production in the most economical and effective ways. Thus, from *one* dependable source of supply you are assured of (1) completely unbiased tooling recommendations and, (2) the selection of the exactly right carbide or steel or *both* to provide maximum production!

Both Firth Sterling's famous CIRCLE "C" Super High Speed Steel and FIRTHITE Sintered Carbide cutting tools and tips are used alternatively for most metal removal operations. Write now for literature and unbiased recommendations for your specific needs.

R-305

Firth Sterling

—INC—

GENERAL OFFICES: 3113 FORBES ST., PITTSBURGH 30, PA.

MILLS: McKEESPORT, TRAFFORD, DETROIT, HOUSTON

OFFICES AND WAREHOUSES*: BIRMINGHAM CHICAGO* CLEVELAND DAYTON DETROIT* HARTFORD* HOUSTON LOS ANGELES* NEW YORK PHILADELPHIA PITTSBURGH WASHINGTON WESTFIELD, N.J.

PRODUCTS OF FIRTH STERLING METALLURGY

High Speed Steels
Tool & Die Steels
Stainless Specialties
High Temperature Alloys
Sintered Tungsten Carbides
Firth Heavy Metal
Chromium Carbides
High Temperature Cermets
Zirconium

CALL YOUR FIRTH STERLING DISTRICT OFFICE OR DISTRIBUTOR. ASK MR. TOOLEY.

Develops Process

New type cold-worked tubing to be produced by Tube Reducing Corp. with expanded facilities

A UNIQUE process has been developed by Tube Reducing Corp., Wallington, N. J., to produce a new type of cold-worked tubing, called Rockdrawn tubing. The firm will expand its facilities for the manufacture of this product.

It is to be produced by a combination of processes to obtain improved surface, closer tolerances and better mechanical properties, company officials say. Tubing first will be compression-cold-worked in tube reducers, then further reduced by cold drawing to customer's individual specifications and sizes in a range of outside diameters from ⅛-in. to 1⅛ in.

Tube Reducing Corp. obtained patents for the tube reducing method of compression forming in 1929 and since then has been engaged in the development and improvement of the process, together with the manufacture of high quality precision tubing (Rockrite) produced by this process in sizes ⅞-in. to 5.75 in. OD.

A new plant was completed recently to increase the size range of compression formed tubing to 17 in. OD. Improvement and expansion of plant facilities for the production of the new cold-drawn tubing product, Rockdrawn, will make available precision cold-finished tubing in the range of ⅛-in. to 17 in. This represents another step in the company's program of diversification.

Foundry Enlarges Buildings

Continental Foundry & Machine Co., East Chicago, Ind., is constructing additions to present buildings at its Wheeling, W. Va., Works to provide better working conditions in the machine shop and erection floor areas.

Kaiser Expands Mead Plant

Kaiser Aluminum & Chemical Corp., Oakland, Calif., will expand the carbon baking furnace capacity at its Mead reduction plant near Spokane, Wash. The new construction, scheduled for completion this fall, will bring the total furnace buildings in full production at the plant to three, each housing 360 pit-type furnaces.

Republic Enlarges Warehouse

Republic Steel Corp., Cleveland, will build a 44,000-sq-ft addition to its Youngstown warehouse. The expansion will enable the warehouse to carry a more complete line of products, including several Truscon building products developed since 1951. Superintendent of the Youngstown facility is Warren F. Klemm. Manager of the firm's Warehouse Division, Youngstown, is Walter M. Bachtell.

Detroit Firm Buys Building

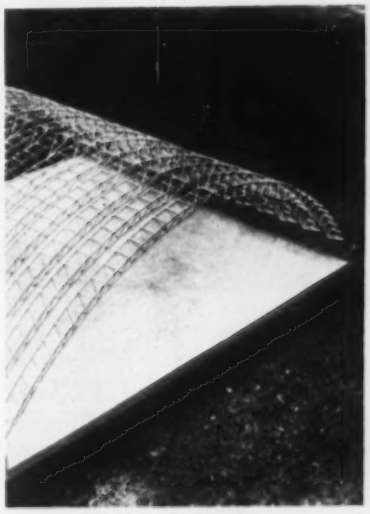
American Metal Products Co. bought a building containing 140,000 sq ft adjacent to its Vancouver avenue plant in Detroit. This will permit the production of new products in the automotive and aircraft fields and the expansion of research facilities, says D. F. Roby, president. The property was purchased from Holley Carburetor Co. which will move its Vancouver avenue operations to enlarged facilities on Nine Mile road.

Patternmaker Changes Name

Dewey Pattern Works, Toledo, changed its name to Ohio Pattern & Mfg. Co. and became a division of Washtenaw Pattern Co., Wayne, Mich. M. J. Giles was named general manager of Ohio Pattern, supplier of wood and metal patterns to foundries.

AC Spark Plug Leases Space

General Motors Corp.'s AC Spark Plug Division, Flint, Mich., is expanding its facilities by leasing the Palace Corp. factory at 1714 E. Hemphill Road, Flint. The move gives the division an additional 120,000 sq ft of floor space, making the total in Flint about 2.3 million sq ft. In addition to spark plugs, the division makes oil filters, fuel pumps, air cleaners, silencers, speedometers and many other types of instruments.



Look Ma! No Pillars

Model of a section of a $17 million building to be erected in Chicago shows the patented three-hinge triangle truss eliminating internal supports. Framework will be covered by galvanized, corrugated steel sheets made by Wonder Building Corp. of America. Others participating in its development are Jay J. Seaver Engineers and Wonder Steel Truss Co.

Wil-Son Mfg. Expanding

Wil-Son Mfg. Co., Cloverport, Ky., maker of infrared ovens and lighting fixtures, purchased a factory building at Maceo, Ky. The company plans to build another factory at Owensboro, Ky., which eventually will house its general sales department, Tool & Die Mfg. Division and engineering and experimental work.

De Laval Improves Facilities

De Laval Steam Turbine Co., Trenton, N. J., reveals an extensive long-range expansion program. A building has been erected on a site adjacent to its other plants in Trenton for the manufacture of high-pressure turbochargers for diesel and gas engines. New buildings to be erected in Forrest Park, Ill., and Houston will house the district sales and service facilities. A plant is being erected in Millbrae, Calif., scheduled to be completed by August, to house the sales and service facilities of De Laval Turbine Pacific Co., a wholly owned subsidiary. De Laval Separator Co., Pough-

(*Please turn to page 72*)

WE WELCOME YOU

to a New Era of Electrode Performance

AN EXCLUSIVE STEP FORWARD . . . .

in the techniques of electrode manufacture now gives GLC graphite electrodes a coefficient of expansion lower than any other electrode on the market today.

The resultant rugged resistance of GLC graphite electrodes to thermal shock substantially reduces breakage and spalling, and affords worthwhile economies in electric steel production.

This achievement is a result of a high degree of integration between discoveries in our research laboratories, refinements in processing raw materials, and improved techniques in electrode manufacture.

Lower operating costs experienced by our customers are a reflection of our partnership in their progress, and point the way to a new era of electrode performance for the electric furnace steel industry as a whole.

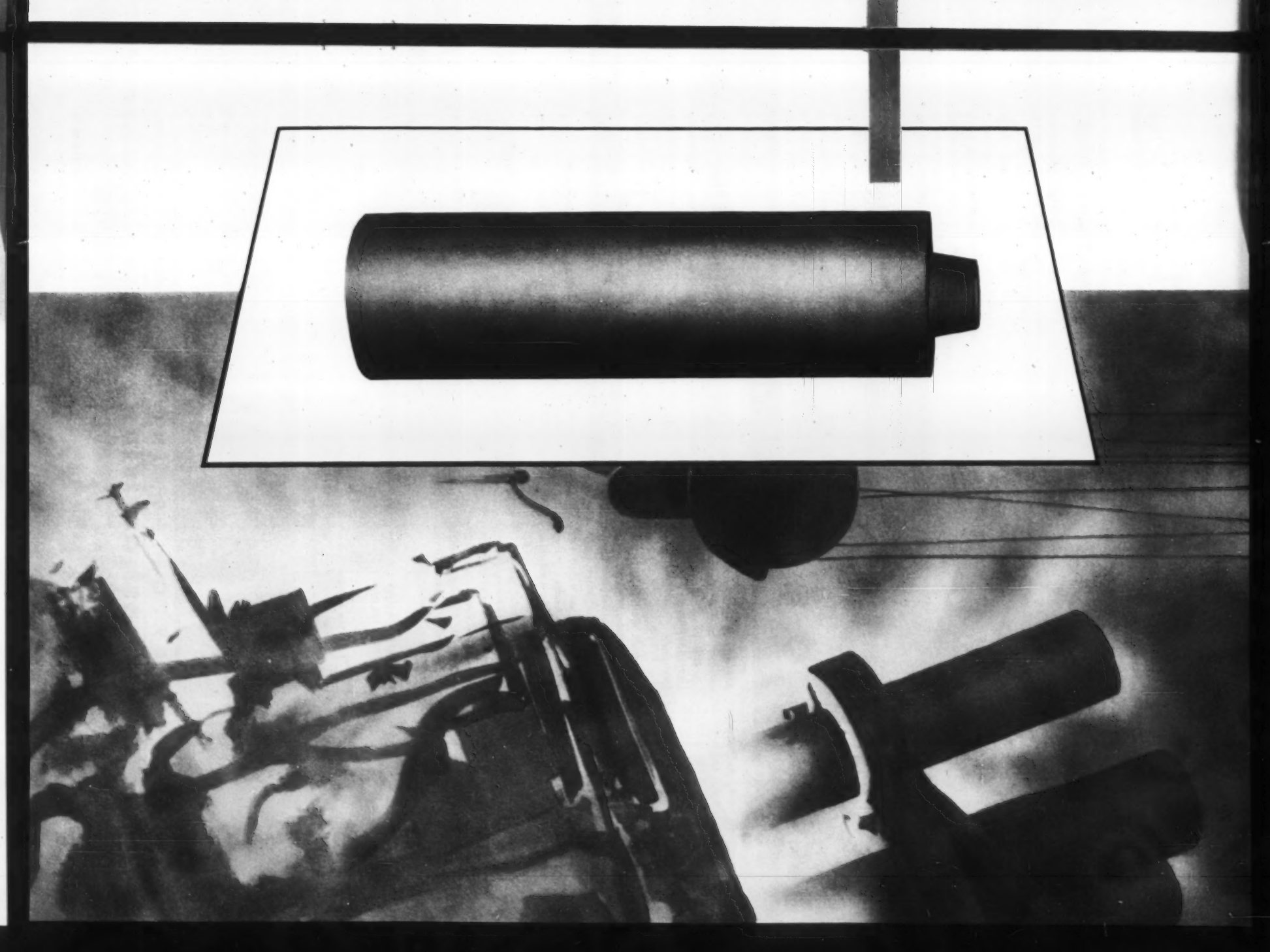
GLC ELECTRODE DIVISION

Great Lakes Carbon Corporation

GRAPHITE ELECTRODES, ANODES, MOLDS and SPECIALTIES

ADMINISTRATIVE OFFICE: 18 East 48th Street, New York 17, N. Y.
PLANTS: Niagara Falls, N. Y., Morganton, N. C.
OTHER OFFICES: Niagara Falls, N. Y., Oak Park, Ill., Pittsburgh, Pa.

Sales Agents in Other Countries: Great Northern Carbon & Chemical Co., Ltd., Montreal; Overseas Carbon & Coke Company, Inc., Geneva; Great Eastern Carbon & Chemical Co., Inc., Chiyoda-Ku, Tokyo.



Jet airpower is the backbone of America's defense, and jet engines depend upon scientifically exact turbine vanes, turbine blades and supercharger buckets for power and performance.

To mass-manufacture these vital precision parts, Austenal applies the ancient "lost wax" method of investment casting, greatly improved and now called Microcast – a technique so precise and so accurate that Austenal turbine buckets and vanes eliminate costly machining and require only a minimum of finishing.

The Microcast process was developed by Austenal, and its use in the manufacture of vital jet components is only one of many applications. In every field of industry, Microcast is proving that complex, intricate metallic parts can be made better and more economically by investment casting.

Let Austenal show you how Microcast can help brighten your production picture.

See Austenal's original informative 16mm color movie, "A Story of Industrial Progress". Available without charge.

austenal

LABORATORIES, INC.

microcast division

224 EAST 39th STREET · NEW YORK 16, N. Y.

(*Concluded from page 69*)

keepsie, N. Y., will share these quarters. S. P. Felix will manage the Millbrae plant.

AS&W Adds Product at Duluth

Two welded fabric producing machines are being installed in the Duluth plant of American Steel & Wire Division, U. S. Steel Corp., Pittsburgh. They will produce a variety of sizes and kinds of welded wire fabric for use in building, highways and street construction; concrete pipe; and other jobs.

Trane Boosts Plant Capacity

Trane Co., La Crosse, Wis., opened a 55,000-sq-ft coil manufacturing plant, designed to increase capacity 25 to 30 per cent. Cost of the plant, including $150,000 worth of new machinery and equipment, was $525,000.

Pitney-Bowes Buys Plant

Pitney-Bowes Inc., Stamford, Conn., purchased the recently vacated plant of Schick Inc., now located in Lancaster, Pa. Pitney-Bowes makes postage meters and business machines.

Plans Industrial Park Site

An industrial park site, particularly suited to the needs of the metals industry, is being developed in Richland Park, Tex., eight miles northeast of Ft. Worth. Estimated cost will be between $8 million and $10 million.

Electronics Firm To Build

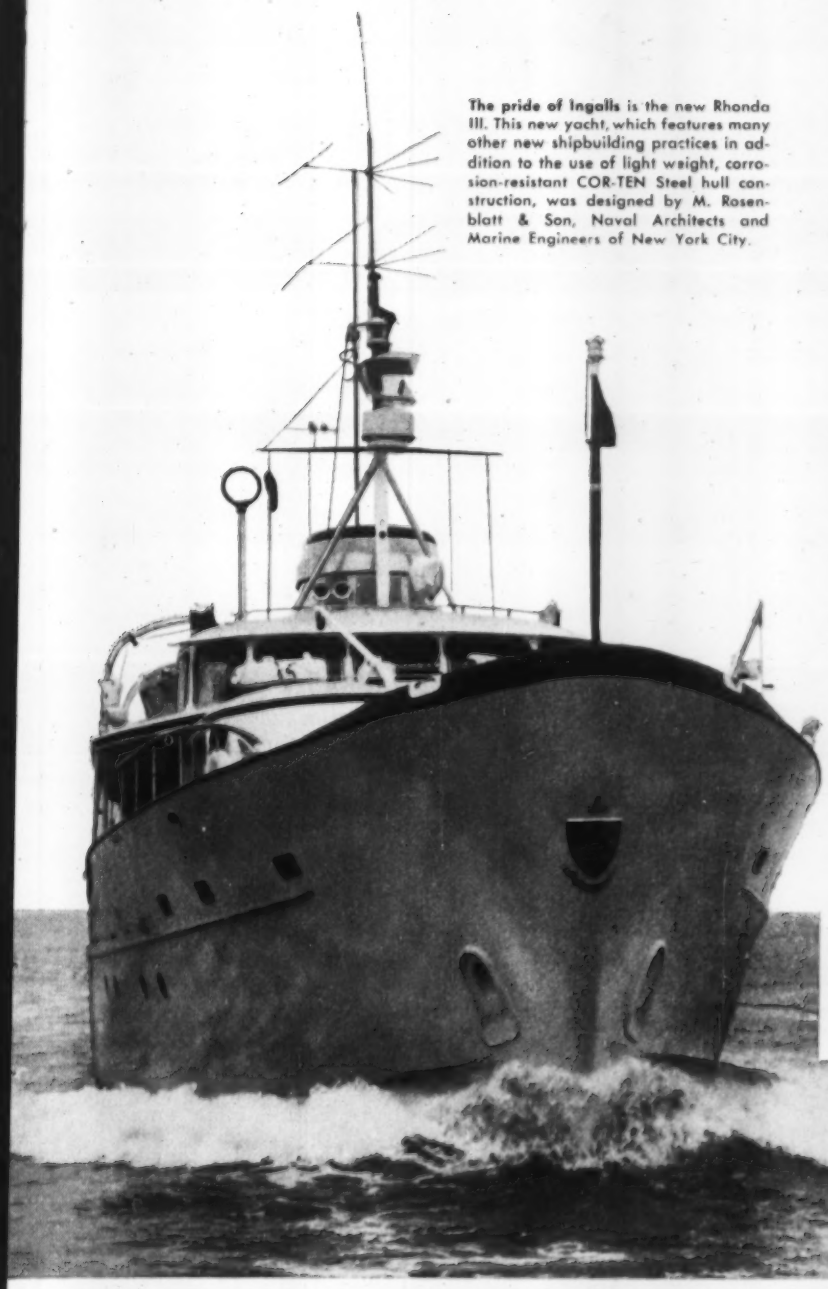
Dalmo Victor Co., San Carlos, Calif., subsidiary of Textron American Inc., will build a $1.2-million building in Belmont, Calif., to bring under one roof all of the electronics firm's present facilities.

Wisconsin Toolmaker Expands

Snap-on Tools Corp., Kenosha, Wis., will add 45,000 sq ft of floor space to its plant in Mt. Carmel, Ill., under a contract awarded to Luria Engineering Co., Bethlehem, Pa. Snap-on Tools Corp., maker of industrial wrenches, mechanics' hand tools and automotive repair

USS COR-TEN STEEL

gives strength and extra corrosion resistance to hull of pleasure yacht



The pride of Ingalls is the new Rhonda III. This new yacht, which features many other new shipbuilding practices in addition to the use of light weight, corrosion-resistant COR-TEN Steel hull construction, was designed by M. Rosenblatt & Son, Naval Architects and Marine Engineers of New York City.

The Ingalls Shipbuilding Corp., of Birmingham, Alabama, has been constructing ocean-going vessels of many types for more than 25 years. This vast experience paid off when it came to the design of this beautiful new-type 96-foot yacht—and the decision to use USS COR-TEN High Strength Steel to give extra strength and corrosion resistance to the Rhonda's hull.

In a new booklet describing many of the unusual features of their new RHONDA III, The Ingalls Shipbuilding Corp., explains their reasons for the choice of USS COR-TEN High Strength Steel:

"Rhonda III is constructed almost entirely of all-welded COR-TEN corrosion-resistant steel. No rivets whatsoever are used. Most hull plating is 7.65 pounds or 3/16" thick. Early in the design stage extensive investigations and tests of specially designed steel panels with widely spaced weld beads were conducted to determine optimum size and length of welds for the best possible combination of strength and fairness. In the opinion of the designers, whose experience covers many years of foreign as well as domestic yacht and ship building, RHONDA III's hull is the finest example of a fair light welded steel hull. Despite this, strength and sea-worthiness have in no way been compromised."

Here again USS COR-TEN High Strength Steel was selected because of its proved ability to reduce deadweight and to stand up under corrosive conditions—even when it's the severe combination of salt water and ocean atmospheres.

NOW AVAILABLE . . . our new "Design Manual for High Strength Steels" is ready for distribution. This excellent book contains comprehensive and practical information that you will find extremely useful in designing your product for greater economy and efficiency by the sound use of high strength steels.

For your free copy, write on your company letterhead, giving title or department, to United States Steel Corporation, Room 4741, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS MAN-TEN · USS COR-TEN · USS TRI-TEN

UNITED STATES STEEL

(Advertisement)

What it takes to make a 3000 Degree Refractory Concrete

Because of the widespread interest in the use of refractory castables, many furnace operators have asked us for the story behind the performance of B&W's unique refractory concrete, Kaocast.

Here are the answers to some of the most frequently asked questions:

Q. *When you refer to Kaocast as a 3000 degree refractory castable, do you mean that its melting point is 3000° F?*

A. No, this means that its service use limit is 3000° F; its melting point is 200 degrees higher.

Q. *Just what does it take to make a 3000 degree refractory castable like B&W Kaocast?*

A. Let's first define a few terms. Refractory castables are made with granular materials which are volume stable at high temperatures and which can undergo repeated heating and cooling cycles without disintegration. These materials, known as refractory calcines or grogs, are blended with suitable hydraulic binders. The initial strength of a refractory castable is thus developed in the same manner as that of ordinary concrete—that is, through the chemical action between water and the binder. A strong *ceramic bond* is formed when the refractory castable is subjected to temperatures above the vitrification point.

Q. *Then you have a grog, a binder and a method of putting them together. Which is most important?*

A. You can't say that any *one* is most important. It's a combination of all three. Let's take them one at a time. Our grog consists primarily of the proper blend of kaolin and other alumina-silica materials. This ratio enables us to achieve a grog with minimum expansion and shrinkage, a high fusion point, and greater stability under load, at varying temperatures.

Q. *And now, what about the binder?*

A. There are a number of factors responsible for the success of the Kaocast binder. One is the compound Tricalcium Penta-aluminate (3 lime to 5 alumina). This formula produces the most refractory compound (highest melting point) that can be made from lime and alumina. Another is that by using the purest commercially available lime and alumina, the Kaocast binder is substantially free of iron and silica. Such traces of these that are present combine during the prefiring of the binder to produce stable compounds.

Q. *Just how important is the manufacturing or "blending" of the grog and the binder?*

A. If one factor could be singled out as "most important" it would be quality control.

Direct control over the fineness of materials, prefiring temperatures, and other phases of manufacture is possible at B&W because both the grog and the binder are made and blended at B&W's Augusta Works—under B&W's direct control and supervision.

Q. *These factors you've discussed must add up to some specific advantages of Kaocast. What are they?*

A. B&W Kaocast has all the advantages of easy installation which are responsible for the widespread interest in refractory concretes, plus these exclusive features: It is the only 3000 degree refractory concrete with high resistance to spalling and low volume change throughout its operating range.

THE BABCOCK & WILCOX CO.
Refractories Division
General Offices:
161 East 42nd St., New York 17, N. Y.
Works: Augusta, Ga.

tool equipment, will augment machinery and equipment at its Mt. Carmel plant with a substantial number of additional machines, some to be transferred from its plant in Newport, Pa.

Chrysler To Buy Parts Firm

Chrysler Corp., Detroit, will purchase Universal Products Co. Inc., Dearborn, Mich., subject to approval by stockholders of the latter firm, maker of drive shafts and their components.

L. B. Foster Opens Branch

L. B. Foster Co., Pittsburgh, supplier of pipe, steel sheet piling and railroad trackage materials, established an office at 805 Peachtree St., Atlanta 5, Ga. The firm appointed Paul A. Duke as southeast regional manager in charge of the new office.

Electronics Firm Expands

Topp Industries Inc., Los Angeles, manufacturer of electronic parts for aircraft, is adding 45,000 sq ft of factory floor space, tripling current production capacity.

Bostitch Building Plant

Bostitch Inc., Westerly, R. I., will move late next year into a new plant to be built in East Greenwich, R. I. The company makes staples and stapling machines.

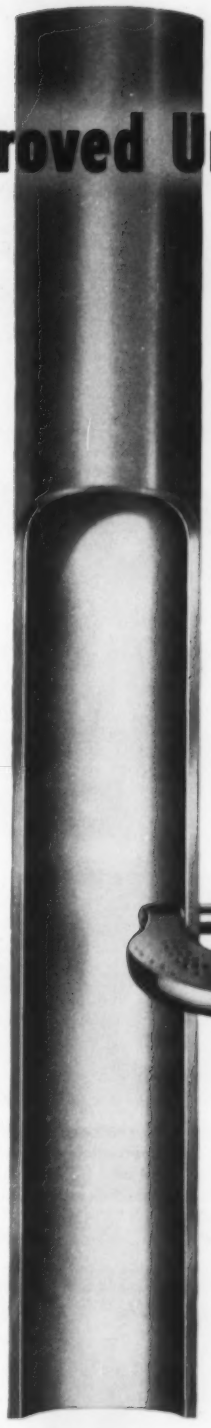
Sharon Improves Facilities

Sharon Steel Corp., Sharon, Pa., has awarded a contract for a 44-in. blooming mill with a capacity of 100,000 tons of ingots per month. It will be installed at its Roemer Works, Farrell, Pa. Complete with buildings, electrical equipment, soaking pits and all necessary facilities, the cost will be about $13.5 million. The project is scheduled to be completed before July 1, 1956.

This is another step in Sharon's program of modernization and improvement. The company recently blew in its No. 3 blast furnace, which was completely relined and equipped with top blast pressure. In addition, a new 300-ton open-hearth furnace was put into oper-

(*Please turn to page* 78)

Proved Under PUNISHMENT



STANDARD CYLINDER TUBING

"Mirror Finished" to precision tolerances, it's used in automobile shock absorbers, power steering, hydraulic pumps . . . without further sizing or finishing.

Here's a busy part of an automobile shock absorber that's built for brutal punishment. It's Standard's modern "mirror-finish" Cylinder Tube. So that it won't weaken or leak under punishment, every inch of this tubular "toughie" must measure up to exacting specifications—in cylinder finish . . . in I.D. tolerances as close as .001" . . . in extreme uniformity of wall thickness and concentricity . . . in internal pressure resistance, to shocks up to 9000 P.S.I. The elimination of broaching or further processing of any kind effect significant savings for our customers in product assembly.

As you see here, the engineering involved behind the application of tubing to your product is *more than skin deep at Standard.* Our engineers will gladly show you why in helping you with your tubular application—whether it involves a simple structural or mechanical member . . . or a precision application.

Send for 8-page folder on all Standard products or see Sweet's Design Catalog.

MAKE "STANDARD" YOUR SOURCE FOR—

- WELDED MECHANICAL TUBING
- WELDED STAINLESS TUBING
- BOILER AND HEAT EXCHANGER TUBING
- EXCLUSIVE "RIGIDIZED" PATTERNS

STEEL TUBING SIZES: ½" O.D. TO 5½" O.D.—.028 TO .260 WALL.
STAINLESS SIZES: ¼" O.D. TO 4½" O.D.—.020 TO .154 WALL.

MORE FURNACE VERSATILITY

Lindberg radiant tube is easy to change. Just turn off furnace, lift old tube out and put in new tube.

These are two of the three Lindberg gas-fired radiant tube carburizing and carbonitriding furnaces recently installed by an internationally known maker of farm machinery. With these furnaces 75% of parts are carbonitrided and 25% carburized. In addition, some bright annealing is done and the versatile Lindberg units can easily be converted for other heat treating applications.

Lindberg Vertical Radiant Tube Great Advance in Heat Treating Furnaces

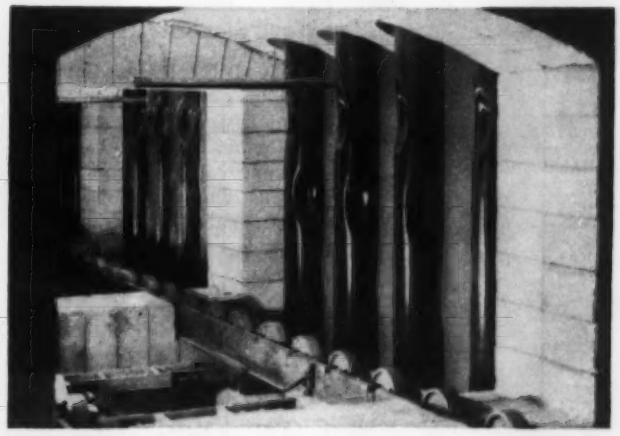
When metal needs heat, Lindberg furnaces with the new Lindberg lightweight vertical radiant tube offer a better way to apply it. Industry the world over is finding that Lindberg furnaces with this new vertical tube provide a versatility no other type of furnace can give. Carbonitriding, carburizing, carbon restoration, bright hardening or annealing and normalizing are all possible with only minor adjustments.

Here are some other exclusive advantages. Lindberg furnaces include a built-in pitless quench tank. Uniform case depth is assured because each charge automatically remains at heat the same length of time. A built-in purge chamber receives work loads for purging prior to heating.

Whatever type of furnace fits your production needs, from gigantic continuous pusher-type to the small manual batch-type furnace, Lindberg engineers can develop exactly the right equipment for you.

This three-row pusher Carburizer, with vertical radiant tubes between each row, was built for a large automobile manufacturer.

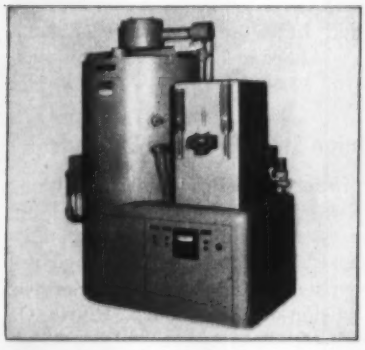
WITH LINDBERG RADIANT TUBES



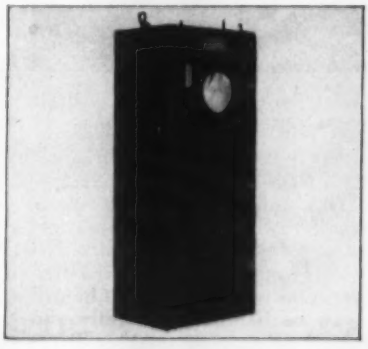
Here you can see the unique "dimpled" design of the new Lindberg vertical radiant tube. Installation is a Lindberg continuous pusher-type gas-fired carbonitriding furnace.

Revolutionary new development

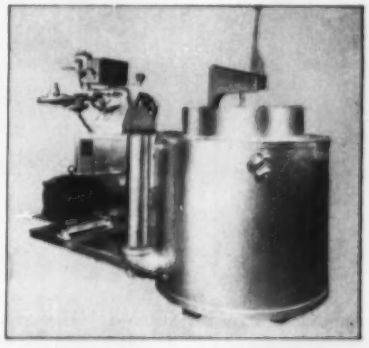
The development by Lindberg of the lightweight, easily-changeable vertical radiant tube (patent pending) is one of the most significant improvements ever made in industrial furnace design. It eliminates the bulk and bend problems of the old-fashioned horizontal tube and the uneven heat patterns inherent in earlier vertical tubes. The secret lies in the new Lindberg tube's "dimples". Here's how they work—in the radiant tube a central stream of mixed air-and-gas is surrounded by a cylindrical stream of air alone and combustion occurs in the area between these two streams. The "dimples" create eddies in the streams accelerating combustion and maintaining even temperatures along the entire length of the tube. If you aren't fully familiar with this revolutionary development ask us, or your nearest Lindberg Field Engineer about it.



This newly-designed Lindberg Hyen generator is used with Lindberg radiant tube furnaces to supply the most exacting atmospheres needed for any heat treatment.

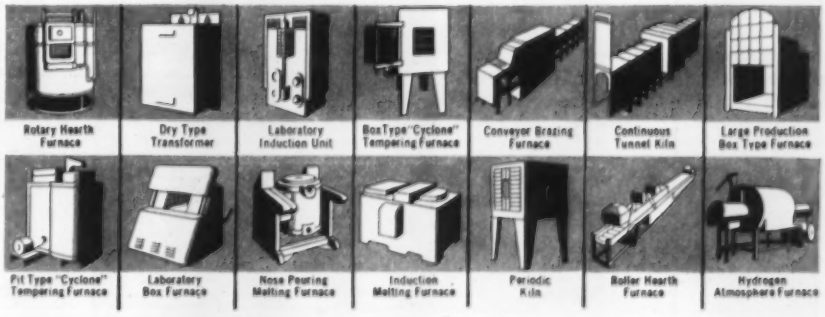


Here is the new Lindberg Carbotrol unit which automatically controls the carbon potential of furnace atmospheres provided by the Lindberg Hyen generator.



For the final step in heat treating, the famous Lindberg cyclone tempering furnace, for 20 years the standard of furnace performance. Pit or box type available.

Lindberg manufactures many kinds of equipment in the industrial heating and related fields. A few of these are symbolized here. If you are interested in any of these please write us for the specifics on them, or get in touch with your nearest Lindberg Field Engineer. (See your classified telephone book.)



LINDBERG ENGINEERING COMPANY

2441 West Hubbard Street, Chicago 12, Illinois

Los Angeles Plant: 11937 South Regentview Avenue, at Downey, California • **Associate Companies:** Lindberg Industrial Corporation, Chicago • EFCO-Lindberg, Ltd., Montreal, Canada • Lindberg Italiana, Milan, Italy • The Electric Furnace Company, Ltd., Weybridge, Surrey, England • Etablissements Jean Aubé, Paris, France • Lindberg Industrie Ofenbau, Gross Auheim, Germany

look to
ESCO for ALLOY AVAILABILITY

HASTELLOY B & C ALLOY 20
INCONEL MONEL
PRECIPITATION HARDENING GRADES
0.03 MAX. CARBON

YOU GET FAST DELIVERY... even on small orders of special alloys...
Hastelloy B & C, Monel, Inconel, Alloy 20, 0.03 Max. Carbon, Precipitation Hardening Grades are just a few examples of alloys that are available—fast—when you need them. No waiting for long runs of standard production items to be completed before your order can be started. Big orders can be handled efficiently and economically too. A complete metallurgical laboratory enables *ESCO* to take advantage of the latest technological advances. Result: Outstanding quality control on every order.

UNUSUAL SHAPES AND SIZES ARE NO PROBLEM EITHER...
ESCO can supply you with static or centrifugal castings in wall sections and dimensions to meet your most exacting requirement. *ESCO* Shellcast is available, too, where needed.
Ask for details or write for free booklets... "How to cut Costs With *ESCO* Spuncast ®"... and "*ESCO* Stainless and High Alloy Products for the Process Industries".

specialists in high alloy steels

ESCO
HIGH ALLOY DIVISION

ELECTRIC STEEL FOUNDRY CO.

Manufacturing Plants
2160 N.W. 25th Ave.
Portland 10, Oregon
712 Porter St.
Danville, Illinois

ESCO International and New York Office
420 Lexington Ave., New York City, N.Y.

Other Offices and Warehouses
Los Angeles, San Francisco, Calif.
Seattle, Spokane, Wash.
Centralia, Pa.
Houston, Texas
Eugene, Ore.
Salt Lake City, Utah
Honolulu, Hawaii
In Canada, Vancouver, British Columbia and Toronto, Ontario

(*Concluded from page 75*)
ation recently. Both the blast furnace and the new open-hearth furnace are located in the Roemer Works.

Alan Wood Steel Diversifies

Alan Wood Steel Co., Conshohocken, Pa., purchased the Steel Equipment Division of Penn Metal Corp. of Penna., Philadelphia, subject to approval by Penn Metal stockholders. This division makes steel lockers, cabinets and shelving and will be operated as the Penco Metal Products Division. Penn Metal Corp. will continue to operate its Highway Products Division which makes corrugated metal drainage pipe and accessories.

To Build Plant in Youngstown

Waylite Corp., Chicago, will build a blast furnace slag processing plant on a site owned by U. S. Steel Corp. in the Youngstown district. In a previous item (STEEL, July 11, page 73) the location was given erroneously as Chicago.

Union Steel Products Expands

Union Steel Products Co., Albion, Mich., maker of materials handling baskets and allied products, purchased the land and buildings recently vacated by Colson-Service Division of Colson Corp., Elyria, O. This purchase adds about 84,000 sq ft of manufacturing space to Union Steel's existing 380,000 sq ft in its main plant.

Pace Corp. Buys Building

Pace Corp., Base Line, Mich., maker of ammunition and component parts, acquired an additional 20,000 sq ft of manufacturing space. The property is adjacent to its main plant and will be used for precision machining, assemblies and impact extrusion work.

Baker-Lull Division To Move

Baker-Lull Division of Baker-Raulang Co., Cleveland, will close its Bloomington, Minn., plant this fall and will transfer its remaining manufacturing and service operations to the Baker-Raulang plant at Cleveland. The Blooming-

INDUSTRIAL WASHER MAKER
Gets 67 lb. Weight Saving
FURNACE SHIPPING WEIGHT
Cut from 1029 to 926 lbs.
END FRAME SHIPPER SAVES
40 lbs. with New Container!
Engineered wirebound by General Box reduces shipping weight of high-voltage disconnect switch by 106 lb.
SHIPPING WEIGHT REDUCTION
on Transformer is 156 pounds
MACHINE COVER MAKER CUTS
Shipping Weight by 24 pounds

Ship fewer pounds...save more freight dollars with General-engineered containers

Almost every General-engineered container design brings a reduction in shipping weight. The freight dollars saved usually represent an important sum in themselves. And it's an amount otherwise wasted, because this saving is just one of many benefits that come with the switch to General-engineered containers.

Better product protection is an advantage you can count on because of General's specialized experience and its completely equipped testing laboratories. Reduction in packing costs is another. For example, reductions of 50% in packaging time are not uncommon.

It's easy to find out what General Box can do for you. First step is to telephone the office near you, or write direct. We'll send a man who will quickly be able to advise the second step. You incur no obligation. Be sure to ask for your copy of the new "Heavy-Duty" issue of "General Box."

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

Engineered Containers for Every Shipping Need

• Wirebound Crates and Boxes • Generalift Pallet Boxes • Corrugated Fiber Boxes • Cleated Corrugated and Watkins-Type Boxes • Stitched Panel Crates • All-bound Boxes

VISIT US IN BOOTH 633 AT THE MATERIALS HANDLING EXPOSITION, CHICAGO

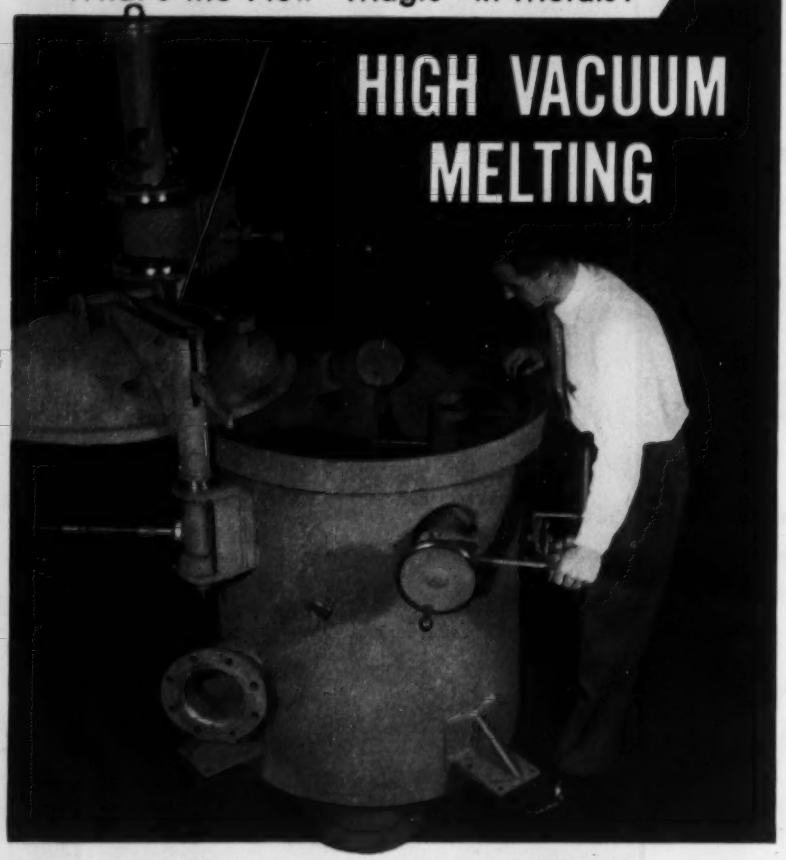
General Box

1837 Miner Street, Des Plaines, Illinois

★ ★ ★ ★ ★

What's the New "Magic" in Metals?

HIGH VACUUM MELTING



In NRC Vacuum Furnaces like this, conventional metals acquire new strengths and a "cleanliness" never before achieved.

NOW...

New Products are Possible

... *Better, Tougher, Lower Cost*

Barriers are being broken — *the barriers of conventional metal performance!* High vacuum melting is creating a new order of metals and alloys with new kinds of properties. And at National Research you will find the people with the world's greatest experience in building these high vacuum furnaces. Be sure your product designers and metallurgists are staking out your claims in this new field. Send coupon below for facts on complete line of NRC vacuum furnaces for research, development, or production — batch or semi-continuous.

NRC

NARESCO
EQUIPMENT
CORPORATION

NARESCO EQUIPMENT CORPORATION
Equipment Sales Subsidiary of National Research Corporation
Dept. 127, Charlemont St., Newton Highlands 61, Mass.
Please send me NRC Vacuum Furnace Bulletin

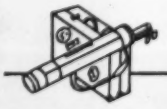
Name_____ Title_____
Company_____
Address_____
City_____ State_____

SALES OFFICES: Boston, Chicago, Cleveland, Los Angeles, New York, Palo Alto, Philadelphia; in Canada: Toronto, Arnprior

ton plant makes earth-moving and special materials handling equipment.

Beaird Widens Machining Work

J. B. Beaird Co. Inc., Shreveport, La., acquired additional heavy machine equipment to intensify its activity in the heavy custom machining field.



VACATIONS

Yardney Electric Corp., New York, manufacturer of high-capacity, silver-zinc storage batteries, will close its plant for two weeks beginning July 25. Operations will be resumed Aug. 8.

NEW ADDRESSES

Schwenzer Tool & Die Co. moved to its new plant at 2300 Clinton St., Cheektowaga, N. Y., from smaller quarters in Buffalo.

Gudeman Co. moved to enlarged quarters at 2661 Myrtle Ave., Monrovia, Calif., for increased production of electronic components.

Tool & Sales Division of Wesco Machine Corp. was changed to Wesco Tool Inc., 318 N. Victory Blvd., Burbank, Calif.

Mechanics' Iron Works Inc. moved its office and plant to 1390 N. Kingsland Ave., St. Louis 14, Mo.

Steel Founders' Society of America will move its offices on Aug. 4 to 606 Terminal Tower, Cleveland 13, O.

Calumet & Hecla Inc.'s Wolverine Tube Division moved its general sales offices to Guardian Towers, Guardian Bldg., Detroit 26, Mich. The division moved its Northern California sales offices to 1301 Sixth St., San Francisco 7, Calif.

Simplex Valve & Meter Co., Lancaster, Pa., established its New York metropolitan office at 117 Liberty St., New York 6, N. Y.

IF YOU MAKE *Springs*

YOU'LL DO BETTER WITH ROEBLING

ROEBLING makes high carbon steel spring wire and flat spring steel... and makes it *better*... for every sort of spring and for every product that requires spring characteristics. Hard drawn, hard rolled, annealed or soft, tempered or untempered ... they're all available to meet your requirements exactly.

Among these Roebling materials are zig-zag and no-sag wires; mechanical and valve spring wires; music wire; clock and motor type spring wires; flat spring steel and upholstery spring wire of all types. The variety of parts into which these are formed is almost endless, but manufacturers all report that Roebling quality and uniformity reduce machine downtime.

Learn for yourself how Roebling can help your production and product. John A. Roebling's Sons Corp., Trenton 2, N. J.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREGONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK

you are invited to see our

"LIVING CATALOG"

of the *newest* LAPOINTE

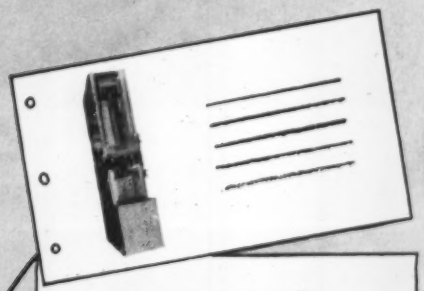
BROACHING MACHINES

in action ... at

THE MACHINE TOOL SHOW
CHICAGO, ILL.
SEPT. 6-17, 1955
INTERNATIONAL AMPHITHEATRE

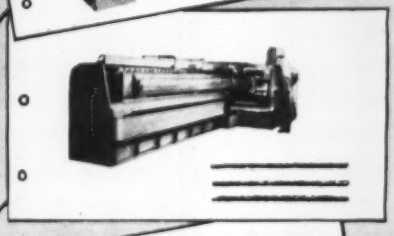
booth 707

This is your opportunity to be brought up to date on the amazing progress that has been made in the past few years in BROACHING, the modern method of machining metal!



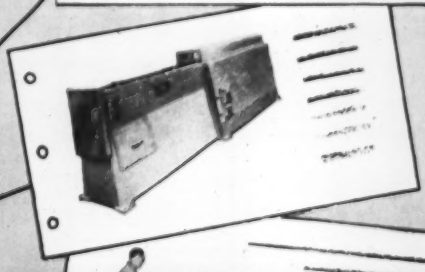
See the VUE-7

Electric Drive Pull-Up machine: broaching spiral gears, 2 at a time, at the rate of 320 parts per hour! (The world's first electro-motive powered pull-up broaching machine.)



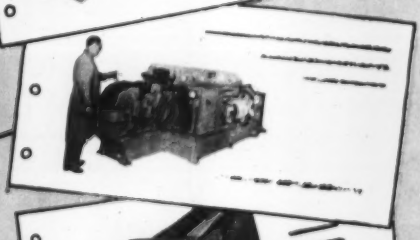
See the SRHE

Electric Drive Horizontal machine: broaching jet engine turbine discs at a speed of 280 feet-per-minute! *



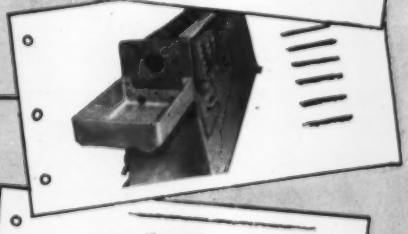
See the SPECIAL

72" Horizontal Electric Drive machine: the first of its kind for internal or external broaching. This machine is broaching involute gear sprockets, a surface broaching operation on sprocket, with 25 teeth, at rate of 25 complete parts per hour.



See the CONTINUOUS

Broaching machine: broaching automotive connecting rods at the rate of 1200 parts per hour, using 24 fixtures per machine.



See the HP-10

"Toolroom" broaching machine: broaching standard keyways in gears. (A small, universal machine, 48" stroke.)

See the SHARPENER

with micro-feed attachment sharpening and backing off all types of broaches. 36" size, with high speed spindle.

* The fastest broaching operation ever performed . . . finish-broaching more than 235 "pine tree" slots per hour!

THE LAPOINTE MACHINE TOOL COMPANY
HUDSON, MASSACHUSETTS • U. S. A.
In England: Watford, Hertfordshire

THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

Technical Outlook

PROOF—Construction will be started soon by Blaw-Knox Co. on a demonstration plant using the Ruthner process for pickle-liquor recovery. It's a co-operative project financed by several steel companies. In the Ruthner process (STEEL, Apr. 27, 1953, p. 130) waste pickle liquors are regenerated with hydrogen chloride which is recycled. No undesirable by-products are left. The ferrous sulphate in the liquor regenerates an equivalent quantity of sulphuric acid—the same material that was used to make up the pickle solution.

NAVY FEATHERWEIGHT—Everybody gets excited about lighter aircraft, but who gets worked up about lighter ships? Du Pont did, with the result that 30 to 45 tons are being trimmed from aircraft carriers simply by replacing old-type moisture seals on electrical equipment with molded nylon ones.

HIGHER CREEP STRENGTHS—Stable oxides of zirconium, titanium and chromium dispersed in molybdenum produced compositions with greater creep strengths than those of conventional moly alloys, Battelle Institute discovered. At 1800°F, some of the oxide additions increased the 100 hour creep rupture strength of molybdenum almost fourfold. Further increases may come from compositions including both metallic and oxide additions.

TITANIUM SORTING—Douglas Aircraft Co., Santa Monica, Calif., is separating usable titanium sheet from rejects by ripping samples apart. The samples first get a notch with a semicircular bottom. A Baldwin-Lima-Hamilton 5000-pound testing machine is hooked to the "ears" on each side of the notch, and the pull begins. A brittle sample tears rapidly in a snapping action. A good, ductile material tears slowly with a progressive action. Type of tear is determined by rate of decline in the applied load.

ATOMIC POWER—If all of the electrical energy produced by the Mark I and Mark II atomic generators (the latter is driving the submarine *Nautilus*) were to be put together it would supply most of metropolitan New York's needs for 34 hours. They've generated more than 5 million kw-hr since they went into operation.

LUBRICATION SAVINGS—McLouth Steel Corp. estimates it will save $60,000 in lubrication costs alone this year by application of individual motors to each roll of front and rear mill tables and the roughing and finishing mill approach tables. This eliminates all lubrication and maintenance of conventional drive gearing.

FRIENDLY CHATTER—High-frequency grinding vibrations can improve surface finishes on steel. L. V. Colwell, University of Michigan, reported to ASME at its annual meeting that these vibrations reduce the temperature in ground surfaces, cut down on incidence of thermal cracks and minimize effects of hardness variations in the grinding wheel.

TOOL STEEL STANDARDS—Six different spectrographic standard samples of high-speed tool steels have been added to the list of over 500 distributed by the National Bureau of Standards. Designed for calibrating and checking spectrographic methods of analysis, the new standards are complex alloys of iron, chromium, vanadium, molybdenum, tungsten and cobalt, together with small amounts of other elements.

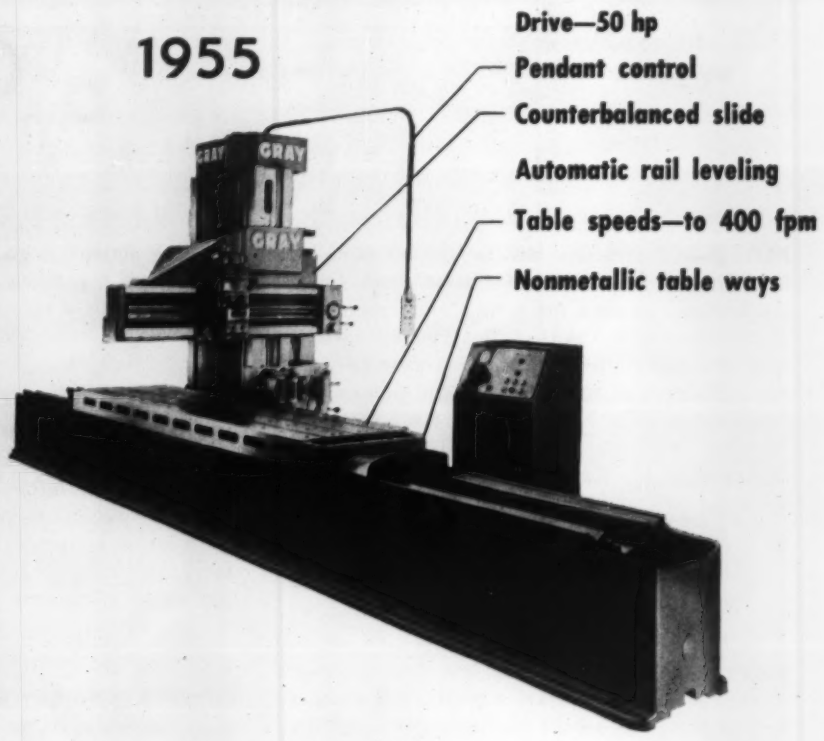
Metalworking Outlook—p. 35 Market Outlook—p. 129

MACHINING . . . 1955

PLANING and SHAPING

This is the fifth in a series of articles on Machining . . . 1955. The first four covered turning, milling, forming and drilling and boring. The final article will be on grinding.

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.



TEN YEARS AGO a planer would have cut across high-carbon, high-chrome steel at 30 fpm. Planing the rectangular cross section of a shear knife blade (made from this steel), the machine would take about 100 minutes to finish the job.

Today, the same job is done with carbide tools instead of high speed steel. The speed would be jumped to 300 fpm, and total floor to floor time would be about 28 minutes.

That figures out to a 260-per cent increase in production. It means that where less than five pieces could be finished in an 8-hour shift before, they now can do more than 17.

The Short of It—That, in a nutshell, is what's happened to planers in the last ten years. These gains didn't come about as the result of any single improvement or development. They're made possible by a combination of higher horsepower, faster speeds, better tools and better machine handling.

Most important are improved carbide tools. With their ability to take the shock that often goes with planer cuts, they made possible the higher speeds.

Muscle — The maturity of carbides for planing gave machine builders a chance to redesign around faster cutting. The limits of the tool had been raised; now the limits of the machine could be extended.

Result is more rugged planers. While strength and rigidity are up, actual weight may be unchanged or even lower.

Horsepower and drive systems are geared to faster cutting. Controls are centralized, often in pendant stations, to let the operator make fast changes without walking around the machine.

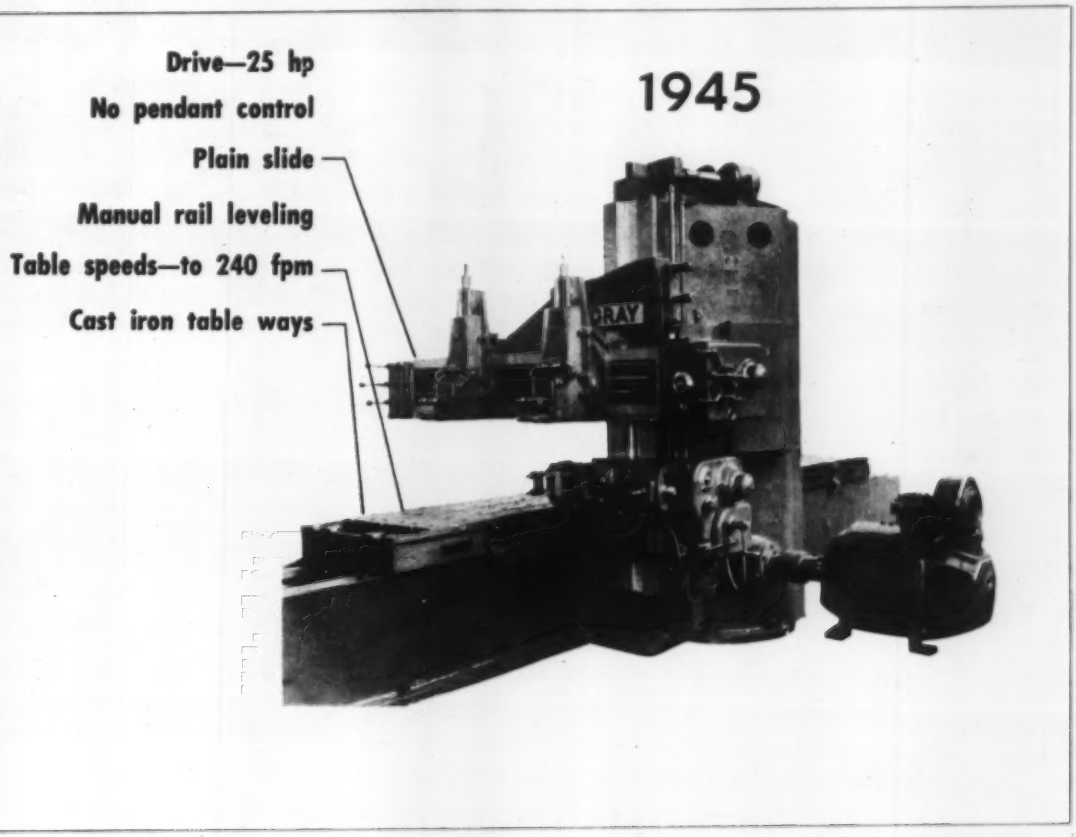
Top speed of old planers was around 240 fpm. New machines will go to 400 fpm. Cast iron used to be planed at about 50 fpm; it's now cut at a minimum of 150 to 200 fpm. Steel cutting was done at 30 to 35 fpm. With carbides and more machine rigidity it's now up to 400 fpm.

Shapers — Carbides, the same shock-resisting ones that aided the planer, have stepped up shaping. At least one new model will both cut and return at 400 rpm. Ten years ago 250 was tops, 175 to 200 fpm were standard.

Centralized controls have eased the operator's job of handling the machine. Power vertical and horizontal traverse are common. New machines have automatic tool lifters.

A Guide — Tracer attachments are almost commonplace on shapers. They don't make a "miracle tool" out of a standard machine. At the same time, they do cut machine handling time, since the operator doesn't have to readjust the machine for a direction change.

Tracers also alleviate the problem that comes with the semiskilled operator, cut the part accurately to shape with a minimum of watching. They make accurate reproduction of parts easy.



Limits—The shaper is still at its best as a highly versatile toolroom and job shop machine. Its use ordinarily is limited when it comes to the high-production, repetitive jobs.

Even these limits are being crowded upward as ease of machine handling, speed of cut and tracers add to the shaper's line.

Broaching—Cast Stellite jet engine buckets get their Christmas-tree roots broached at about 120 fpm. The broach has brazed carbide cutting tips.

The job is done on a hydraulic, vertical, twin-ram broaching machine. A decade ago it would have been impossible.

History — Broaching machines, remotely related to planers, have the same life history as most other machine tools. With the advent of improved carbides, they have been redesigned to broach faster. Where 20 to 30 fpm was considered a normal broaching rate, new machines will do up to 300 fpm. The higher speed is accompanied by more rugged machines and refined drives.

While new hydraulic machines will continue to be standard for many jobs, there's a strong trend toward the electric-mechanical drives.

This drive gives a smooth, steady force that improves surface finish and adds to tool life. With a variable-speed drive, a wide range of ram speeds can be used; you can set up the optimum conditions for every cut.

Automation—Automatic loading, locating and unloading of parts to be broached is commonplace. As a time-saver, handling adds to broaching's inherent speed to make the operation a natural for high production requirements.

A standard pull-up machine, for example, was adapted to cut the splines in side gears. Gears are fed to four stations on a conveyor. The conveyor carries the fixtures. Cycle time is 18 seconds. Gears are broached four at a time; 800 are finished in an hour.

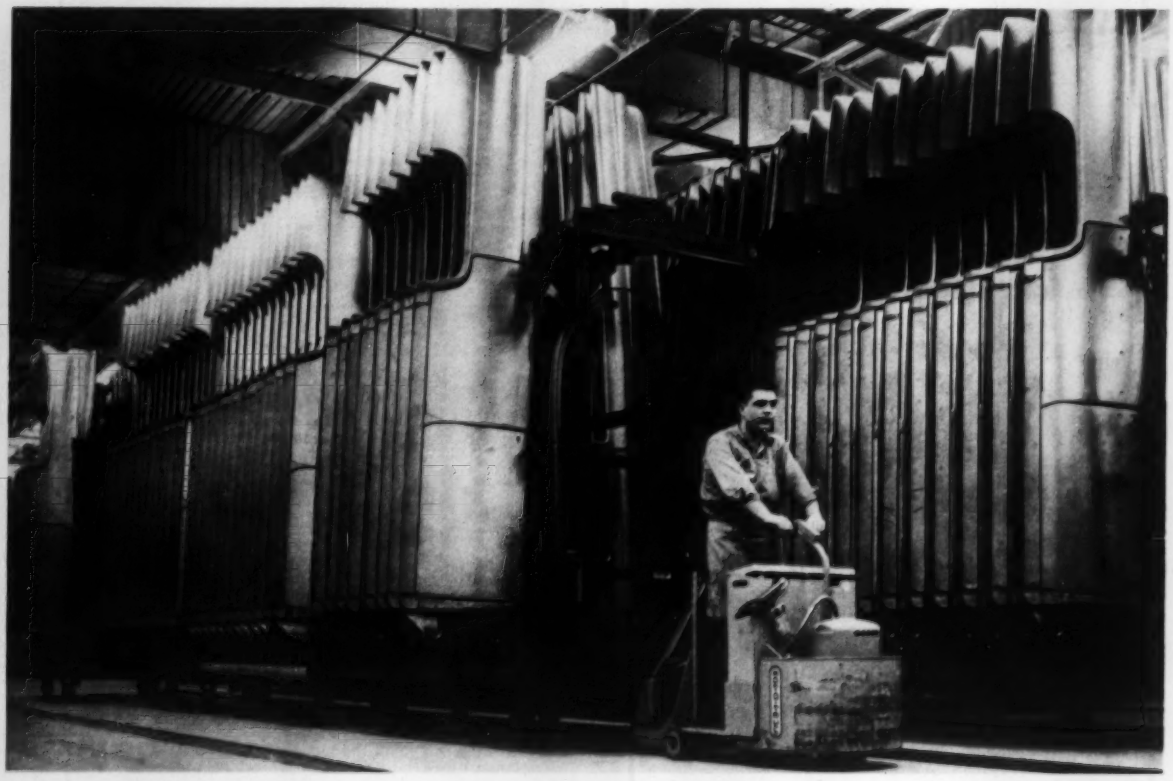
Look also for completely automated shaping, shaving and broaching of gears. The auto industry has pioneered the development of high-volume gear production. Their requirements will extend across industry, making automation a standard.

By Degree—Individual plant requirements will dictate how much automation is used. Starting with simple loading and machine controls, the user can tailor automation to his needs.

New to the gear cutters are automatic inspection devices. They check the gears for tolerances—can be used to control the operation of the machine to keep it working within limits.

One of these checkers is so accurate that it will correct machines for errors caused by tool wear and changes in temperature. If a certain percentage of bad gears comes off the machine, the checker shuts the machine down.

The same checker can be used to grade and classify gears.



Riding-type grip couplers are most efficient on 50 to 150 ft moves

BETTER MATERIALS HANDLING—IV

Round-Trip Ticket to Efficiency

By BYRON E. KENNEL
Assistant Editor

TOW TRAIN ROUTES are the superhighways of the materials handling system.

Ford's new assembly plant in Louisville was built with tow trains in mind. They transport all materials. Flexibility is the word for the system. What's more, routes can be changed to accommodate future layout changes.

The Fundamentals — Tow train operations are designed to provide a service—to get the right material to the right place at the right time. Routes should start and end at the freight car spot on the dock. A balance should be maintained between full trailers leaving the dock and empty trailers returning.

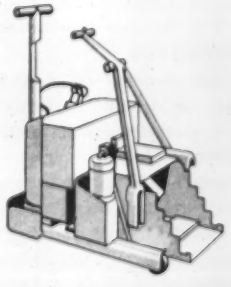
The job of the tow train is to link receiving with warehousing and line feeding. Materials should be delivered to the exact location. Tow trains must stay in their assigned area or route. Always pull a maximum number of trailers—three make a good pay load.

Aisles—For ease in determining stock location in the plant and the establishment of a stock locator list, identify each aisle with numbers or letters.

At Louisville work loads are balanced so that each tow tractor operator has an equitable amount of work. Each tractor services specified reserve and line feed storage areas—two-thirds of all unit-loaded material and three-fourths of all hand-handled material, goes to reserve storage. Each operator has certain aisles assigned to him.

Fork Truck Control—Establishment of specific areas for each fork lift truck aids in obtaining the design intent of the truck and better control of the operators. Localized work centers limit nonproductive work and the scope of operation. Work loads are assigned to each truck by aisle.

Two principles apply to the lay-



Walking-type grip couplers are used to move and position loads in line feed—most efficient on moves under 25 ft

out of fork truck areas: 1. They are related to tow train routes. 2. Areas serviced should be kept as small as possible. A fork truck is a portable elevator; its mobility is calculated chiefly to get the machine to the work.

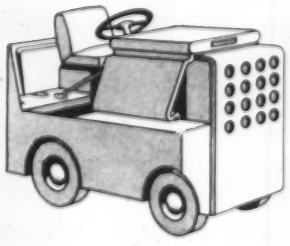
Operating practices at Louisville are: Each truck operates within its assigned area. Use of fork trucks in line feeding is limited to short moves. Travel is held to 300 ft per round trip. Fork trucks are used to support tow train operations.

Operator's Duties—The fork lift truck operator must practice safety and care in handling material. He must learn use and storage location and place material only in correct locations.

The technique of stacking tier racks 12 to 14 ft above floor level must be learned. Racks must be placed correctly on dollies for movement from storage to line operation. Forks are to be adjusted properly for the type load being handled; fork extensions are required when extra length is required to pick up a rack with stock overhanging the sides.

The operator must report things going wrong with his fork truck, so that minor repairs or adjustments can be made promptly. At the end of each day he must turn in a daily log sheet.

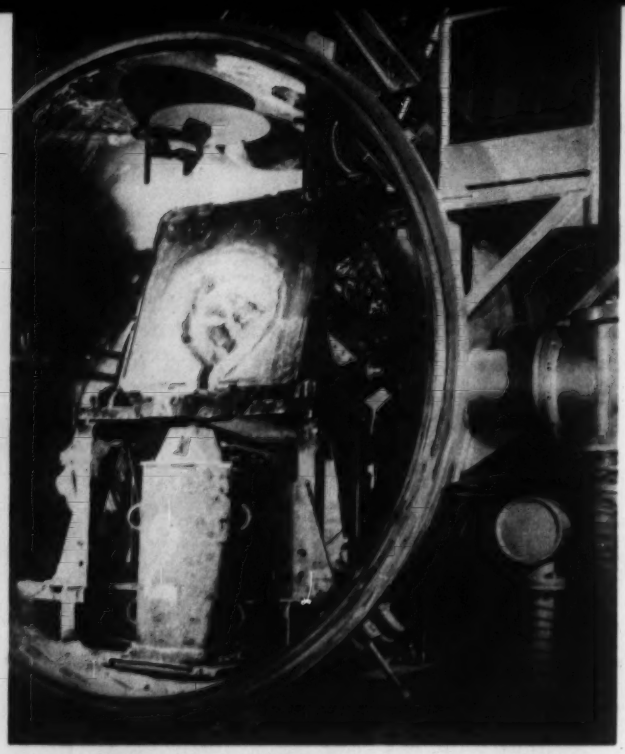
Extra copies of this and the three previous articles on better materials handling are available in quantities of one to three until the supply is exhausted. Other articles covered planning handling facilities, July 4; module units, July 11; and storage and receiving, July 18. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.



Tow tractors are used for horizontal hauling of material

Transportation Management

- Lift truck and tow tug operators are on their own much of the time. For these jobs, select men who are co-operative, who can see what needs to be done and will do it.
- Check tow train routes to insure that workloads remain balanced and all areas receive good service. Equipment and drivers should be reassigned as operating conditions dictate.
- Fork trucks should be used in close cooperation with the tow train. Wheeled equipment should be unloaded promptly; castered racks should not be tiered in storage.
- Keep fork trucks in their assigned area. Exception: Reassign units temporarily when necessary to accommodate unusual work loads.
- All power units should receive preventive maintenance as needed or as scheduled. Wheeled equipment must be greased periodically.
- Teach operators to help keep the plant clean—to stop to pick up any rack accessories found on the floor around the route, or pieces of stock that may have fallen from previous loads that moved through the aisles.
- Give new fork lift operators proper instruction and training, including familiarization with all instruments, controls, hitches and couplers as well as the changing of forks, spreading of forks and the purpose of safety features.



Furnace tilted forward into pouring position, illustrating how it discharges through the tundish into the 500-lb capacity three-piece steel vertical mold. The mold sits on a water-cooled flat. Tapered cap on the mold forms a hot top for the ingot

WHERE BIG vacuum furnaces have been announced, the picture ranges all the way from "installation begun" to "operating, but not talking."

But one company has finished its vacuum shakedown. The two 1000-lb furnaces at the New York Mills, N. Y., plant of Utica Drop Forge & Tool Corp., are producing regularly on a two-shift basis.

Alloys for Jets—Utica's Metals Division is concentrated on high heat-resisting nickel-chromium alloys for jet engine turbine blades, such as Pratt & Whitney Aircraft's Waspaloy and General Electric's M-252. Vacuum processing gives these metals more than three times the stress-rupture life of conventional atmospheric metal of the same nominal composition.

This increase in mechanical strength means that highly stressed turbine blades will have greater service life. Jet engines will be able to deliver more thrust and boost the speeds of the planes they power.

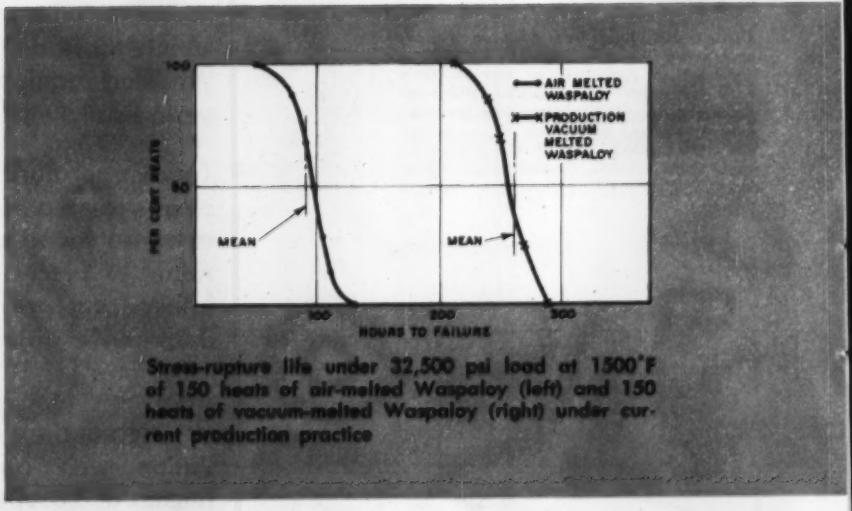
Rising Specs—Originally, Pratt

Out of a Vacuum—Tougher Metals

IN DESIGNING and building the two 1000-lb vacuum furnaces for Utica, engineers of F. J. Stokes Machine Co. Inc., Philadelphia, were breaking new ground. No furnaces of this type and size and capable of doing what these would be required to do had been built before. Utica laid down the broad requirements; Stokes incorporated features to give the furnaces expandability.

Each furnace is a horizontal cylinder 8 ft in diameter and 8 ft long inside. One end of the cylinder is permanently closed with a dished head which is pierced by openings for the vacuum pumping system.

Rollaway—The whole chamber is mounted on flanged wheels that ride a track set in the floor. This permits the chamber to be rolled along its horizontal axis and to be opened for easy access to its interior when charging the crucible and loading the additions hoppers, and for routine servicing. When the chamber is ready to be closed and evacuated, it is rolled up against its access head.



Stress-rupture life under 32,500 psi load at 1500°F of 150 heats of air-melted Waspaloy (left) and 150 heats of vacuum-melted Waspaloy (right) under current production practice

This head supports the centrifugal casting apparatus and is permanently mounted on a reinforced concrete foundation. The flanged mating surfaces of the cylinder and this fixed head are sealed by an O-ring when the chamber is closed.

Furnace—The chamber contains a nose-tilting, induction-heated furnace of rammed refractory material, which can hold a charge of

& Whitney's specification for atmospheric-melted Waspaloy called for a stress-rupture life of 40 hours under a load of 32,500 psi at 1500° F. Vacuum-melted metal of the same composition produced by Utica is now consistently delivering an average life of better than 250 hours at this loading.

Meanwhile, Pratt & Whitney has raised the specification for air-melted Waspaloy to 55 hours at the higher loading of 40,000 psi. But vacuum-melted Waspaloy is currently averaging a life of 90 hours at this loading—nearly twice the life of atmospheric-melted material.

Elongation is also improved. The Pratt & Whitney specification for Waspaloy calls for 5 per cent. Vacuum-melted metal is giving 15 per cent. This is important in forging turbine blades as the greater ductility tends to reduce brittle failure of the parts under impact.

Scrap Saver — Vacuum melting permits use of scrap for charging the furnace to a much greater degree than with air-melting. This brings vacuum-melted alloys down close to the price of air-melted virgin metal. Both internal scrap (flash and trimmings from its own forging of turbine blade blanks and other internally-generated scrap) and external scrap (missed heats of air-melted material, and flash and trimmings for operations at outside plants) are used by Utica.

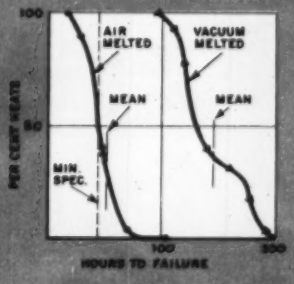
Vacuum melting also makes an important contribution to conservation. Scarce and expensive alloying elements which oxidize and are lost during atmospheric melting, are preserved by vacuum. They can be used more economically because their alloying effect is achieved by smaller quantities than are normally needed. Moreover, the scrap of vacuum-melted metal can be remelted and reused as a high-alloy material, and alloying elements are thus wholly reclaimed.

Vision—Utica's swing to vacuum melting began in 1952. Dr. F. N. Darmara, then assistant to the president of Utica and its chief metallurgist, and now vice president and general manager of the Metals Division, was looking for ways to make better and tougher high-temperature alloys. Vacuum melting seemed to offer the brightest promise of close control over the composition of the finished metal.

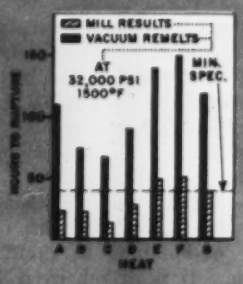
Utica designed and built an experimental vacuum furnace and later added two small production units. Then, the 1000 lb furnaces were ordered from Stokes and subsequently installed under Air Force sponsorship.

Booming—Utica's current production is four to five times the rate previous to the Stokes installation. Requirements of the Air Force take the full production.

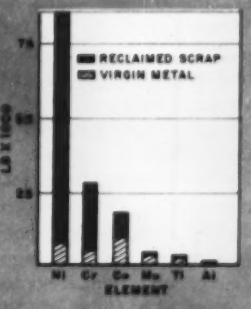
But the Metals Division is already looking to the time when it will be serving other customers with vacuum-melted materials. It is planning ways to improve the properties of standard compositions already in wide use, and working toward development of wholly new alloys tailored for vacuum production.



Stress-rupture life of 100 heats of air-melted nickel-chromium super alloy (left) and vacuum-melted material of the same composition (right)



How remelting salvaged seven heats of air-melted Waspaloy which failed to meet specifications for hot strength

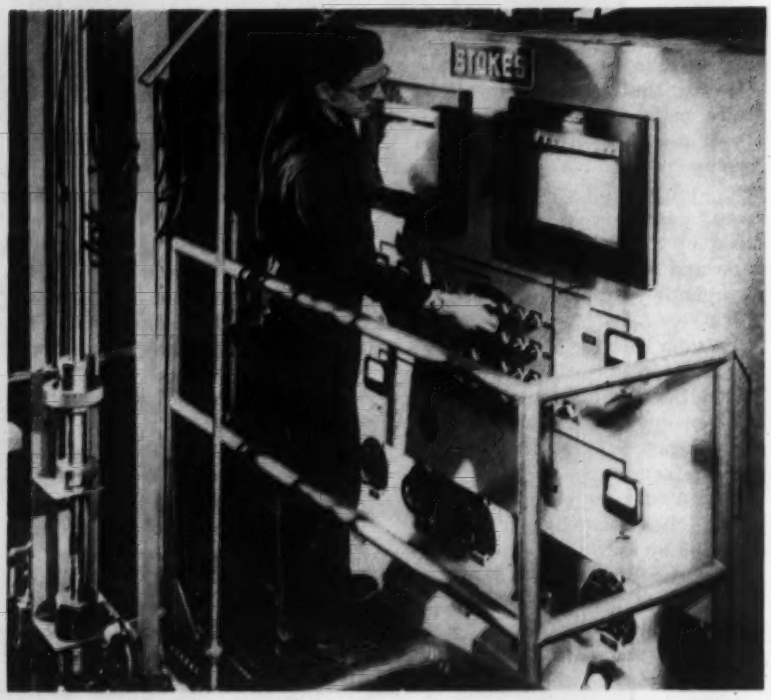


Alloying elements for producing the first 143,000 lb of Waspaloy were supplied largely by reclaiming scrap

1000 lb. Overall dimensions of the furnace (including the coil assembly) are approximately 4 ft high, 3 ft wide, and 3 ft long. The furnace frame is aluminum.

The induction-heating apparatus was designed and built by Ohio Crankshaft Co., Cleveland. Each furnace has its own electrical power source, a 300-kw, totally enclosed, water-cooled, vertical type motor-generator set driven by a 500-hp motor and delivering a 3-kc current at 600 v. An autotransformer reduces the voltage supplied to the coil because of voltage limitations imposed by operating in a vacuum. Both the induction heating coil and the electric power leads are water cooled.

Feeding—In the chamber above



Graphic control panel mounted on top of the furnace is similar in conception to panels popular in the chemical industry

the furnace is a mechanism for adding alloying elements (titanium, molybdenum, cobalt, columbium etc. from six pivoted hoppers while melting is in progress. Each has a capacity of 450 cu in. They can be dumped independently in any order onto a retractable chute with a vibrating trough which delivers their contents into the furnace. Operation of these hoppers is controlled manually from outside the vacuum chamber.

A horizontally swinging cover can be placed over the recess in the furnace to prevent heat loss during processing.

Casting—The furnace can pour either into a single vertical ingot mold, supported on a water-cooled flat resting on the floor of the chamber, or into the centrifugal casting mold on the fixed head. An electric-motor-driven, cable-operated mechanism tilts the furnace above the horizontal so that it will empty completely.

The ingot mold is assembled of three pieces of steel: A stool, a main body, and a hot top, which are wired together after the mold has been positioned.

Ring Mold — The centrifugal mold is assembled of three pieces of forged steel—a backing plate, a mold ring, and a front plate, bolted together. Rings up to 48 in. in outside diameter can be cast in it. Melts of different weights can be cast by varying the front-to-back dimension of the ring. A 500-lb melt will produce a ring about 2½ in. in radial thickness and 5 in. long.

The casting apparatus has been made sturdy enough to take rings up to 20 in. in length, which (including the weight of the mold itself) might weigh as much as 10,000 lb. It was built by the Centrifugal Casting Machine Co., Tulsa, Okla.

Spin—During casting, the mold is rotated at about 200 rpm, but is capable of spinning as rapidly as 400 rpm. It is driven by a 30-hp variable-speed electric motor, with electronic control over the torque and an eddy current brake.

The casting apparatus is supported on roller bearings. A faceplate-type seal maintains the vacuum between the drive shaft and the stationary head of the vacuum chamber.

Evacuation—The vacuum pumping system, designed and built by Stokes, has a pumping capacity in excess of 150,000 micron cfm at a pressure of 10 microns (normal operating pressure averages less than 5 microns). The system comprises six 10-in. booster pumps, rigidly mounted on the vacuum chamber, three on each side, with each set of booster pumps backed by one rotary mechanical forepump with a 500 cfm capacity.

These mechanical pumps are used for rough pumping at the start of the cycle and during this period a separate mechanical pump maintains the vacuum in the booster pumps. At other times, this pump is used to evacuate a vacuum lock in the top of the chamber.

Checking the Heat—Melt temperature (approximately 2900°F) is observed by the operator with an optical pyrometer, making use of a sight tube built into the upper portion of the vacuum chamber. For recording the melt temperature and for accuracy, an immersion-type thermocouple is lowered into the melt by a vertical rod, through a vacuum lock in the top of the chamber.

The assembly on top of the chamber which supports the thermocouple rod and a sampling device also contains a bridge-breaker.

Samples—One requirement for the vacuum furnaces was provision for sampling during the melt, usually just prior to pouring. It is accomplished through the vacuum lock in the top of the chamber, through which a small sampler bucket can be dipped into the crucible and withdrawn.

The sample is then immediately sent to quality control where it is analyzed in a minute and a half in a direct-reading spectrometer.

Corrections—This evaluation is made to determine if concentrations in the melt are within specifications. In the rare event that corrective additions must be made, they can be introduced, without breaking vacuum, through an additions lock built into the side of the chamber. This lock has a capacity of 120 cu in.

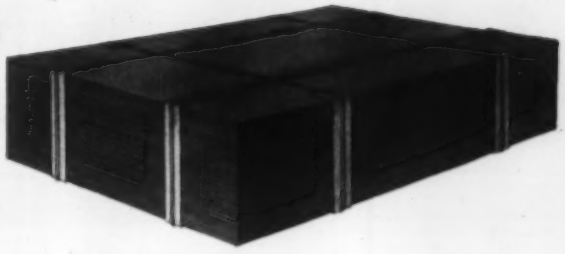
The control station is located on top of the furnaces, where the operator can observe the progress of melting and casting within the chamber. Graphic display was selected because this location puts the operator out of sight of the pumps and valves. The graphic panel valves and pumps are operated in proper sequence.

You'll find safety and savings in steel roof deck construction

Steel Roof decking has proved itself an outstanding material for industrial and commercial buildings. Strong, yet light in weight, steel roof decks are easy to apply and economical to maintain. They can be insulated to exact requirements . . . holding roof dead load to a minimum and permitting economy in the design of supporting structures.

The heavy demand for J&L sheet steel to be used in the manufacture of steel roof decks points up the growing acceptance for this method of construction. In addition, it provides evidence of the manufacturer's confidence in J&L's ability to furnish quality steel exactly to specification.

Whatever *your* product, whatever *your* requirements for formability, uniformity or drawing qualities, you can depend on J&L. You get the most out of your production equipment and add to the value of your finished products by using J&L sheet steel.



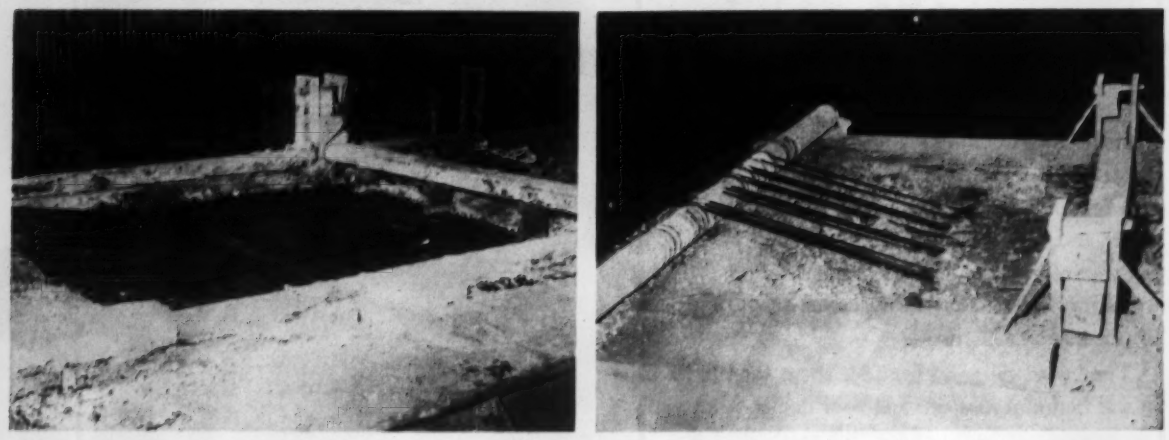
serving steel users everywhere—

J&L's nation-wide distribution is supported by its location and facilities for prompt, dependable river, rail and truck shipments.

J&L STEEL

Jones & Laughlin

STEEL CORPORATION — *Pittsburgh*



At the entrance end of the lead pot, rods pass through molten salt. The coating repels lead completely, even the oxides at the exit end, right

Salt Cover Saves Lead

Lead losses are down 55 per cent in a year's operation on this carbon steel rod patenting line

By ROBERT L. OWENS
Assistant Chief Metallurgist
Laclede Steel Co.
Alton, Ill.

THE BIGGEST PROBLEM plaguing any company using lead patenting processes (quenching heated rod in a 1000°-1075° F lead bath) has been lead consumption. It's a case of losing lead by oxidation on the bath surface or by dragout.

Laclede Steel Co., Alton, Ill., has come up with a solution that effectively controls both losses. No new equipment is required. The only labor involved is the addition of three shovels of salt every 2 hours.

Here's How—After trying several techniques to reduce lead losses, a manufacturer of heat treating salts and lead pot covers was called in for an opinion. Houghton's Liquid Heat No. 636 was suggested, and it worked immediately.

The first step was to clean all lead oxide from the surfaces of the kettle. A layer of salt about 1 in. deep was added—it melts to form a liquid blanket on top of the lead surface, effectively sealing it from the air.

The bare salt cover radiated so much heat that the furnace had to fire hard to keep the temperature up. To counteract this, the salt was covered with No.-3-mesh charcoal which causes it to crust over. The crust is so insulating that the bare hand can be placed on it safely.

Wets the Rod—The salt has the ability to wet the rod and repel lead. A bath of about ½-in. of liquid salt is kept on the entrance end of the kettle so that the rod is coated before it enters the lead. This coating is retained through the entire bath, so the exit end of the bath needs no provision for wiping lead from the rod.

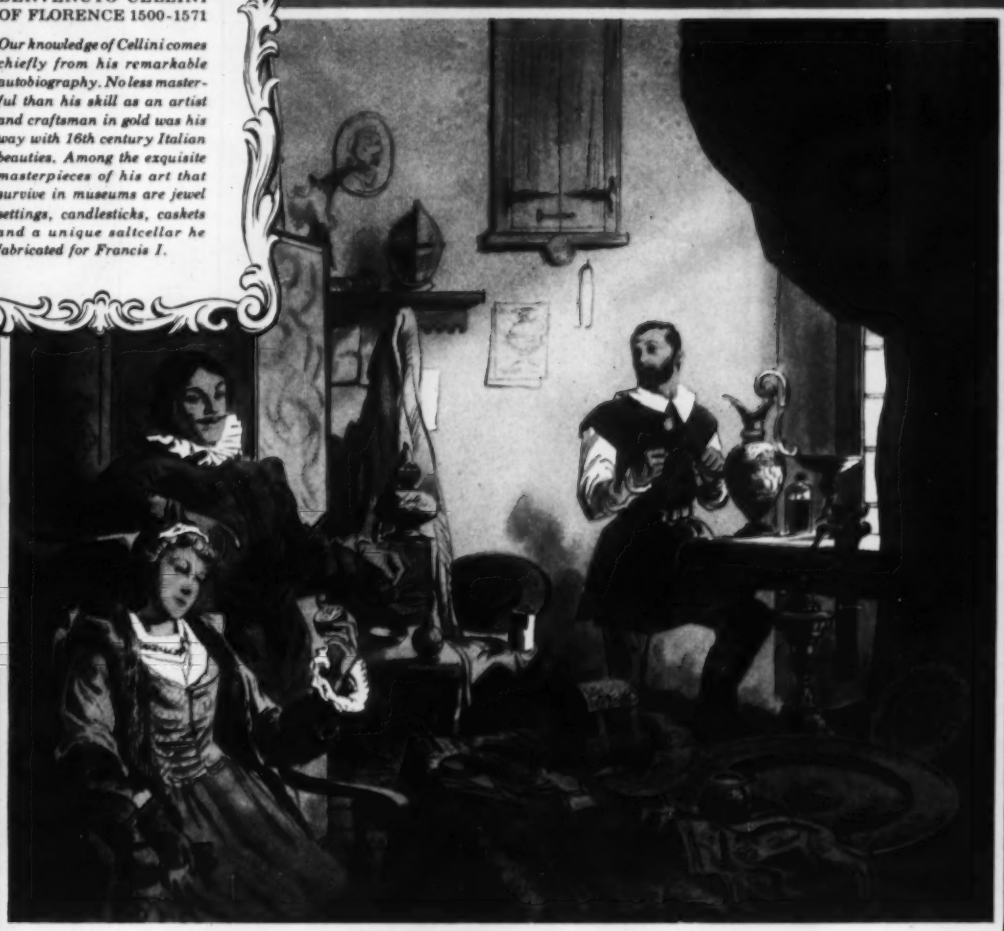
The salt is water soluble and is washed off the rod in a small water bath before going on the take-up frame. Scale remaining on the rod after treatment is light and loose and can be brushed off with a sweep of the hand. Indications point to a savings in pickling solution, thanks to this type scale.

The Old Way—Several types of lead pot covers were tried in an attempt to reduce lead losses. For drag-out losses, a large coal wipe on the exit end of the lead pot worked fairly well when the coal was first piled on.

But the fairly heavy oxide scale produced on the rod when it is run through the air furnace at 1700°F was too much for the coal wipe. After a few minutes of operation, the coal was dragged out onto the floor and had to be reshovelled on the bath.

BENVENUTO CELLINI OF FLORENCE 1500-1571

Our knowledge of Cellini comes chiefly from his remarkable autobiography. No less masterful than his skill as an artist and craftsman in gold was his way with 16th century Italian beauties. Among the exquisite masterpieces of his art that survive in museums are jewel settings, candlesticks, caskets and a unique saltcellar he fabricated for Francis I.



Crafts and craftsmen through the ages

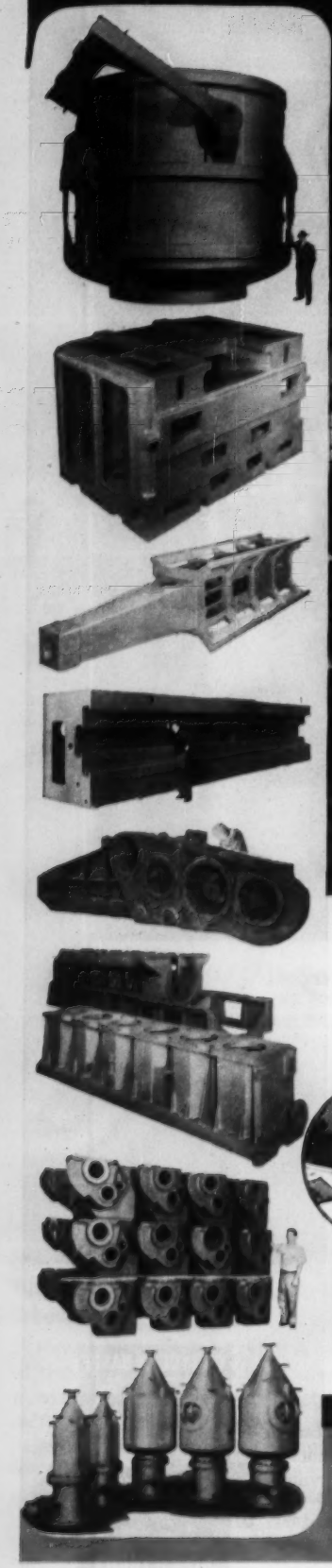
NUMBER TWO OF A SERIES

Enlargements of illustrations available upon request.

Basic Refractories not only furnishes its customers with the finest refractories available, but also employs skilled craftsmen —men with practical steelmaking experience— to insure that the use of these products gives full value.

BASIC REFRACTORIES INCORPORATED CLEVELAND 15 OHIO

REFRACTORIES ENGINEERING AND SUPPLIES, LTD — EXCLUSIVE CANADIAN AGENTS



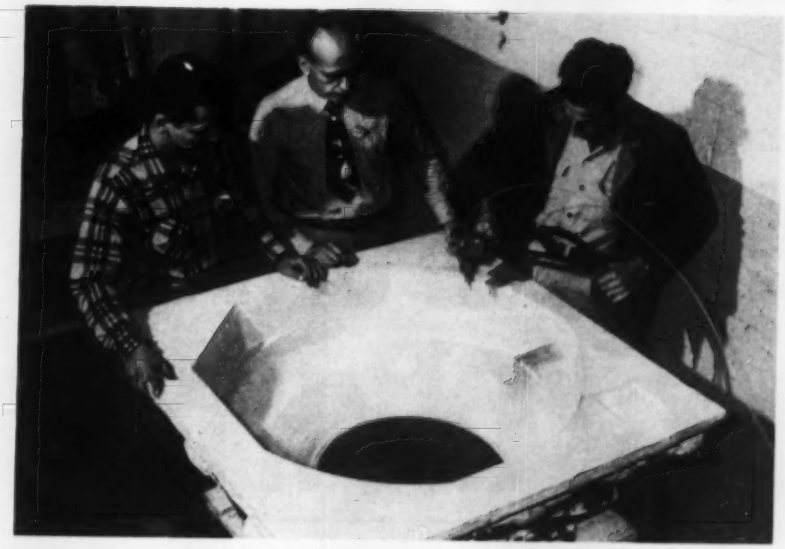
Use WELDED STEEL for Greater Strength with Less Weight!

Parts, assemblies and products, such as those illustrated at left, and the steam condenser unit being fabricated in the illustration above, are typical of thousands of Steel-Weld Fabricated units produced and machined by Mahon for hundreds of manufacturers of processing machinery, machine tools, and other types of heavy mechanical equipment. Mahon's service to buyers of welded structural or heavy plate fabrications is complete—including magnetic and radiographic inspection, machining, and assembling if desired. If you are a buyer of weldments, or welded steel in any form, you, too, will find in the Mahon organization a unique source . . . a source where design skill and advanced fabricating techniques are supplemented by craftsmanship which assures a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Sweet's Product Design File for information, or write for Booklet showing Mahon facilities and capabilities in this field.

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON



Spray coating the plaster negative with a metallizing gun

Spray-cast mold and the plastic laminate formed over it

Molds from a Metal Spray Gun

HOW DO YOU make a mold for high-strength laminates when plastic isn't practical and metal castings cost too much? Northrop Aircraft Inc. has an answer—spray casting.

The Hawthorne, Calif., company uses a wire-type metallizing gun to build up a metal surface on a plaster negative. Backed by the right materials, the metal face becomes an accurate and economical tool.

Low Cost—Where optimum mechanical strength is required, such tools aren't so long-lived as those produced by conventional means. That doesn't alter the fact that they can reproduce fine details sharply, and can greatly reduce the cost of tooling for many practical purposes. Where a sand-cast tool worth over $500 once would have been specified, Northrop has obtained excellent results with a spray-cast tool that cost only $80.

Process—Plaster negatives for spray castings are fabricated with the same materials and methods commonly employed by foundrymen in making plaster patterns. After the plaster is thoroughly dehydrated, it is coated with a material known as Safety Walk. It enables sprayed metal particles to stick to the plaster.

Next, the negative surfaces are primed by using a metallizing gun to spray a thin layer of zinc over the Safety Walk coating.

The zinc makes it easier to apply metals with higher melting temperatures. The metal has been used as a primer and basic tooling material.

Spray Wire — Practically all metals that are available as wire can be sprayed over a zinc primer. For most purposes, Northrop engineers prefer aluminum and bronze coatings. They build the latter up to a thickness of about $\frac{1}{8}$-in.

All metal spray coatings are applied slowly to avoid excessive heating, which would cause the metal and plaster surfaces to separate.

Backing—The coatings are reinforced for use as compression molds with cast Cerrohigh, a lead-bismuth alloy, before they are separated from their plaster negatives.

Coatings for contact-pressure molds, which do not require high mechanical strength, are reinforced with a 5-in.-thick Fiberglas laminate to minimize weight. Fiberglas layers in the laminate are bonded to one another and to the metal surfaces with a catalyzed polyester resin which is cured at a temperature of about 300°F in a thermostatically controlled oven.

Ready To Use—After the metal cast has been reinforced, the plaster negative is broken away from the metal. Then, as a rule, nothing more than simple cleaning and polishing are required to complete the tool.

Labor is the most expensive item involved. Tools are made in from 30 to 135 hours.

The largest tool fabricated has about 10 sq ft of work surface. Smaller tools have work areas amounting to less than 1 sq ft. Critical dimensions have been maintained within tolerances of ± 0.001 in.

ELECTRUNITE SAVING 9¢ PER INCH

Clamp-type air and hydraulic cylinders made by Carter Controls, Lansing, Illinois, make many manufacturing operations automatic. Typical might be toggle operations, spring motion returns, die-set strippers, multiple holding and clamping.

One model of this low-cost, all-purpose cylinder delivers a two-inch stroke through a 2.4-inch steel air-cylinder body. For these bodies, Carter Controls had been using tubing made by a different method. A switch to Republic ELECTRUNITE® Electric Resistance Welded Tubing eliminated expensive ball sizing and burnishing for one thing. Since the ball sizing could only be done in short lengths, it was necessary to cut the tube prior to balling.

Now, Republic ELECTRUNITE Mechanical Tubing is purchased in long lengths and automatic screw machine production is practical.

The result of all this is that the air-cylinder body made of Republic ELECTRUNITE Steel Tubing shows a gross manufacturing saving of more than nine cents an inch!

Republic ELECTRUNITE Mechanical Tubing is consistently uniform in wall thickness, tolerances, roundness and surface finish. It is *precision* tubing on a production basis in every sense of the word, available in both carbon steel and in stainless steel analyses.

Write Republic your problem in any tubular or cylindrical part. Let's see where we can help you save . . . pennies or dollars.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
3120 East 45th Street
Cleveland 27, Ohio

Saving money interests me.
Send facts showing how your products can help.

☐ ELECTRUNITE Steel Tubing
☐ Republic Cold Drawn Carbon Corrected Bars
☐ Republic Electro Paintlok
☐ Republic ENDURO® Stainless Steel

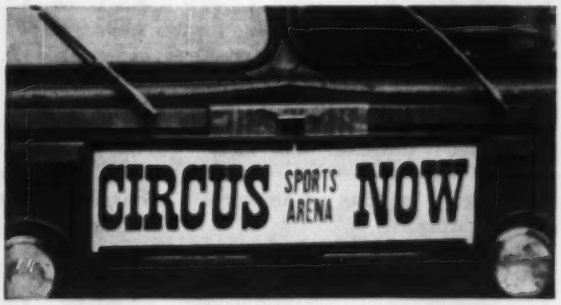
Name_____ Title_____

Firm_____

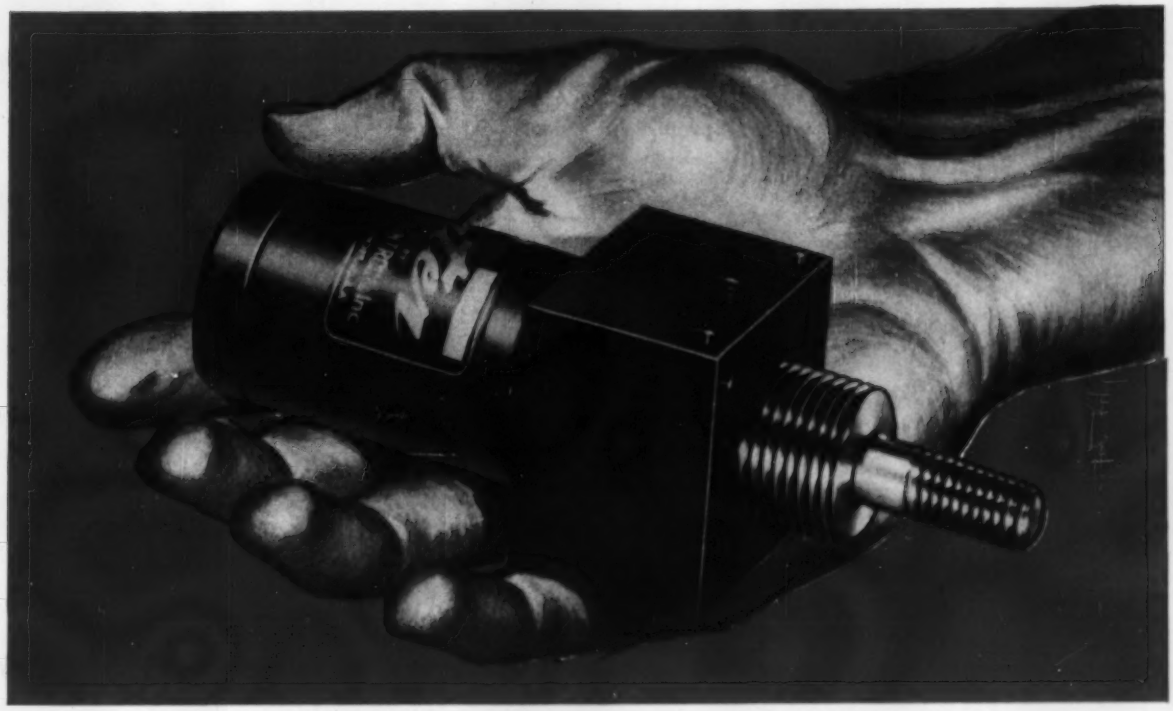
Address_____

City_____ Zone____ State_____

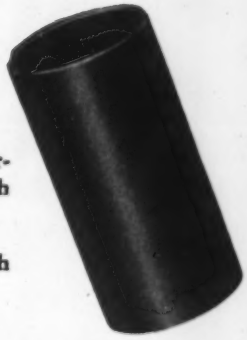
K-6726



COSTS CUT 8%. That's the result of using Republic Electro Paintlok for these traveling poster frames, manufactured by The Yarder Manufacturing Co., Toledo, Ohio. Electro Paintlok is Republic's zinc-coated sheet steel that's chemically treated to take paints, lacquers and synthetic enamels . . . and to hold them for years. It cuts pre-paint cleaning and degreasing costs, welds readily, is easy to fabricate. If you paint on steel, write for facts about Republic Electro Paintlok.

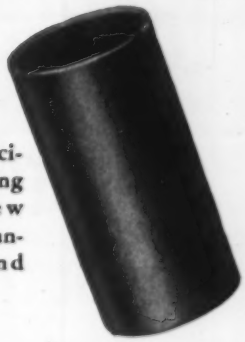


THE OLD WAY

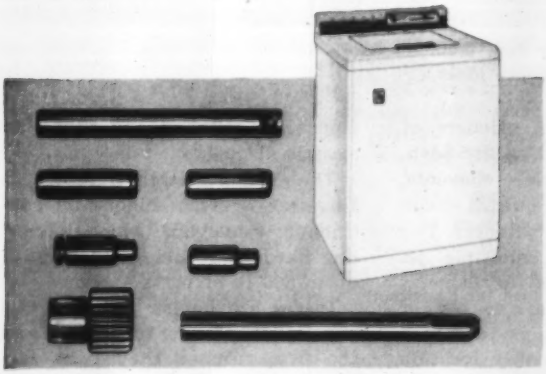


1. Cut to length.
2. Size and burnish inside surface by pressing ball through tube.
3. Thread short lengths which are subject to distortion.
4. Cost ratio: 214

THE ELECTRUNITE WAY

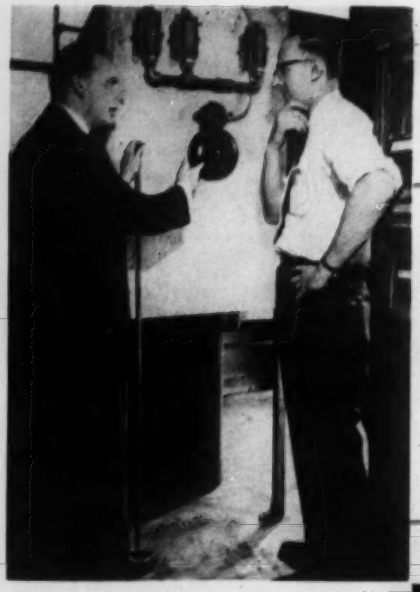


1. Feed long lengths of precision ELECTRUNITE Tubing into automatic screw machine; roundness is unaffected by cutoff and threading.
2. Cost ratio: 100

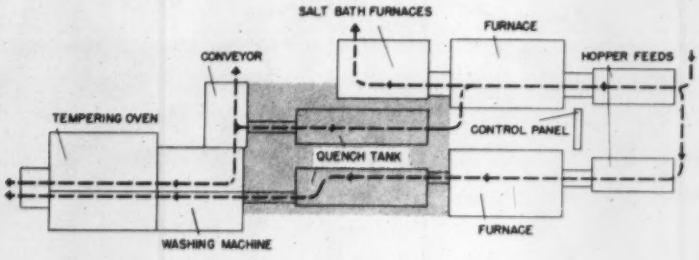


NORGE REDUCED COSTS 16% on automatic-washer parts. They did it by switching to Republic Cold Drawn Carbon Corrected Steel, and eliminated a costly carburizing operation. Machinability is good and quality of the parts improved. Republic's carbon correction restores carbon lost during hot rolling, restores it right out to the edge of the bar. No need to buy oversize bars to allow for surface removal. Norge saves both metal and money. You can, too. Write Republic.

HERE, REPUBLIC ENDURO STAINLESS STEEL DIDN'T SAVE, IT EARNED! Wouldn't you spend $9 to make $40? Flxible Manufacturing Company did just that when it switched to Republic ENDURO Stainless Steel as the material for public rental lockers. Compared with previous costs for painted lockers, ENDURO cost about 9% more. But, the bright, attractive stainless steel attracts 25% to 40% added revenue. ENDURO is bright, attractive, easy to care for. You can't wear it out. Neither can high traffic locations. Republic will help you apply it advantageously, economically. Send coupon.



Shaded area in this schematic drawing of Elastic Stop Nut's heat-treating setup indicates the area protected by the fire extinguishing system. It includes leads to quench tanks, quench tanks and inclined conveyor to washing machine. At left is the alarm bell of the system. Gas cylinders stand behind the bell panel



CO_2 System Guards Production

Carbon dioxide sprays from these discharge nozzles to envelop the conveyor leading from the oil quench tanks

A FIRE in two oil quench tanks at Elastic Stop Nut Corp., Union, N. J., caused thousands of dollars of damage to equipment.

But the most serious consequence was the production which piled up at the heat treating department. Shipments were curtailed for six days.

In the Past—It won't happen again. An automatic fire extinguishing apparatus built by Walter Kidde & Co. Inc. is on duty at all times to smother a blaze before it gains headway.

Main element of the system is a bank of six, 75-lb cylinders of carbon dioxide. Should a fire flash, rate-of-temperature-rise elements, mounted above the quench tank, trigger three of the cylinders. The gas ejects through multiple jet nozzles and smothers the flame.

Reserve — The reserve set of three cylinders can be actuated manually at the cylinder location if the fire restarts. The primary charge also can be tripped here.

Built into the piping network are pressure-operated trips and switches. They shut down the hardening - tempering operation, stop all ventilation and sound an electric alarm.

The Setup—Heat treating at Elastic Stop Nut is done on continuous conveyors which permit the hardening and tempering of up to 500 lb of parts an hour.

Pieces are hopper fed into two gas-fired, hardening furnaces. From the first furnace they pass successively into a 900-gallon oil quench, into a washing machine and through a tempering oven.

The conveyor leading from the second hardening oven permits a variation to austemper parts.

"With this machine we do a better job . . . faster than ever before"

COLUMBIA STEEL AND SHAFTING COMPANY
CARNEGIE, PA.

Three CONTINENTAL-Medart Centerless Turners like this have now been in service for many months at Columbia Steel and Shafting Company. Here's what they say about them: "These machines have materially improved the operation of our production lines. The finish obtained is of consistently high quality. We particularly like the better manipulation of the bars made possible by more automatic handling. In short, they have fully justified their installation."

Here are the features that put this Model RFRG Centerless Turner in a class by itself for high speed, high quality production: New direct-drive roll feed has patented universal centering device that insures continuous, positive feed and automatically centers work. Separate variable drives for feed and cutterhead maintain precise ratio between bar feed and cutter speeds. Automatic input and output grip carriages permit constant feed and delivery without shut-down. Work is simplified and made easier for the operator by fully automatic push button control at his working position.

The CONTINENTAL-Medart Model RFRG Centerless Turner will turn or rough peel ferrous or non-ferrous bars and tubes up to six inches diameter, at throughput speeds limited *only* by the capacity of the cutting tools. Remember—if your operations call for centerless turning or peeling of bars or tubes from 1" to 10", there is a CONTINENTAL-Medart to do it—faster, better and at lower cost. Write for information.

CONTINENTAL

CONTINENTAL
Foundry & Machine
Company

Engineering and Sales Office, 220 Grant St., Pittsburgh 19, Pa.
General Offices, 144 Railroad St., East Chicago, Ind.
Plants at East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.
Copes-Vulcan Division, Erie, Pa.

(Advertisement)

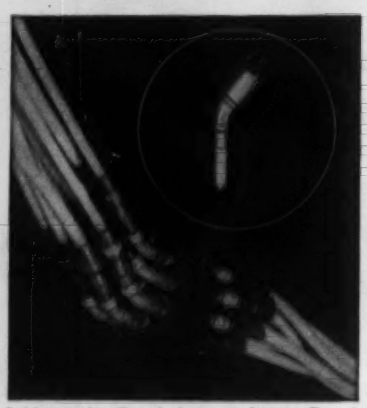
BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport Brass Co.

Reporting new developments in copper-base alloys and metalworking methods.

Bridgeport Alloys and Technical Service Help Produce High-Quality Electrical Connectors



Subject to bending during manufacture, Burndy selected Bridgeport Alloy 3089 to prevent fracture at the elbow of this aircraft connector.

In any electrical system, complex or simple, good connectors are as vital as good conductors. Connectors must often meet severe operating conditions and in some installations, must resist corrosion as well as provide strength to the wiring system.

One of the leading manufacturers of connectors is Burndy Engineering Co. of Norwalk, Conn., producers of connectors for electrical systems ranging in size from 12-inch bus bar connectors to connectors for delicate and complex electronic equipment. More than a billion Burndy connectors are now in use.

In making sure connectors are the strongest links in every electrical system they serve, Burndy subjects connectors to rigorous testing.

Burndy connectors undergo tough mechanical and chemical tests before being put into use. In many cases, they must exceed conductors in conductivity in addition to having maximum tensile strength.

To insure top quality, Burndy compression connectors are made from Bridgeport Oxygen-Free Copper Alloy 103. These are crimped at one end to take a conductor cable, and are often flattened and punched for a bolt hole at the other end.

For connectors requiring greater mechanical strength, Burndy specifies Bridgeport Silicon Bronze 609. This high-strength alloy, as tough as mild steel, has exceptional resistance to corrosion and stress cracking. The remarkable cold-working properties of Bridgeport 609 make it an ideal choice for the many severe forming operations encountered during manufacture.

For the small offset connector shown at left, Burndy turned to Bridgeport Alloy 3089 because this alloy can undergo bending without cracking or checking. Alloy 3089 also has good corrosion resistance, and is particularly adaptable to the manufacture of wire and cable connectors as well as hardware fittings.

Product quality isn't just a matter of materials, or of planning, design or specifications. Quality starts with cooperation between the manufacturer of finished products and the suppliers of raw materials.

A typical Burndy "Hylug" connector made from Bridgeport Oxygen-Free Copper Alloy 103.

That's what happened in this case—Burndy and Bridgeport maintain close technical liasion to develop and establish high quality standards for the finished product. When new requirements materialize, new specifications are written—and met. There's a mutual interest in, and responsibility for doing a thorough job.

This close cooperation with manufacturers is only one of the advantages of Bridgeport's Technical Service. This service is available to you without cost. If you are looking for product quality, product improvement and ways of increasing your metal-working profits, call your nearest Bridgeport Sales Office and ask for Technical Service. They'll be glad to lend their assistance to your operations.

Precision Diode Clips & Taper Pins Accurately Machined from Bridgeport Alloy 6

Lerco Division of Lynn-Deatrick, Inc., of Burbank, Calif., is machining—automatically—three clips for crystal diodes and four taper pin terminals, all for use in electronic equipment. One clip is for front-panel mounting. A second is also for front-panel mounting, but contains a blind hole for dip solder. The third clip serves rear-of-panel connections.

The four terminals are a double-end taper, front tapered and back tapered terminals and a front taper terminal with blind hole.

These tiny parts, small but vital to electronic systems, must retain a firm grip on crystal diodes even after multiple insertions. The tapers must be held to close tolerances for consistently accurate fits. The parts themselves must be strong, precise and economical to manufacture.

Lerco uses Bridgeport No. 6 Alloy for these parts with excellent results. The uniform size of Bridgeport No. 6 eliminates fit and tolerance problems. Its consistent high quality assures easy machining to exact dimensions.

Although Lerco's requirements for Bridgeport No. 6 are unique and exacting, No. 6 Rod can satisfy specifications for more than 90% of the jobs requiring free-cutting brass rod.

If you have a product that requires Bridgeport No. 6 Rod, or any other Bridgeport Alloy, consult your local Bridgeport office for information and help. They'll be glad to apply their metal-working knowledge and experience to solving your specific problems.

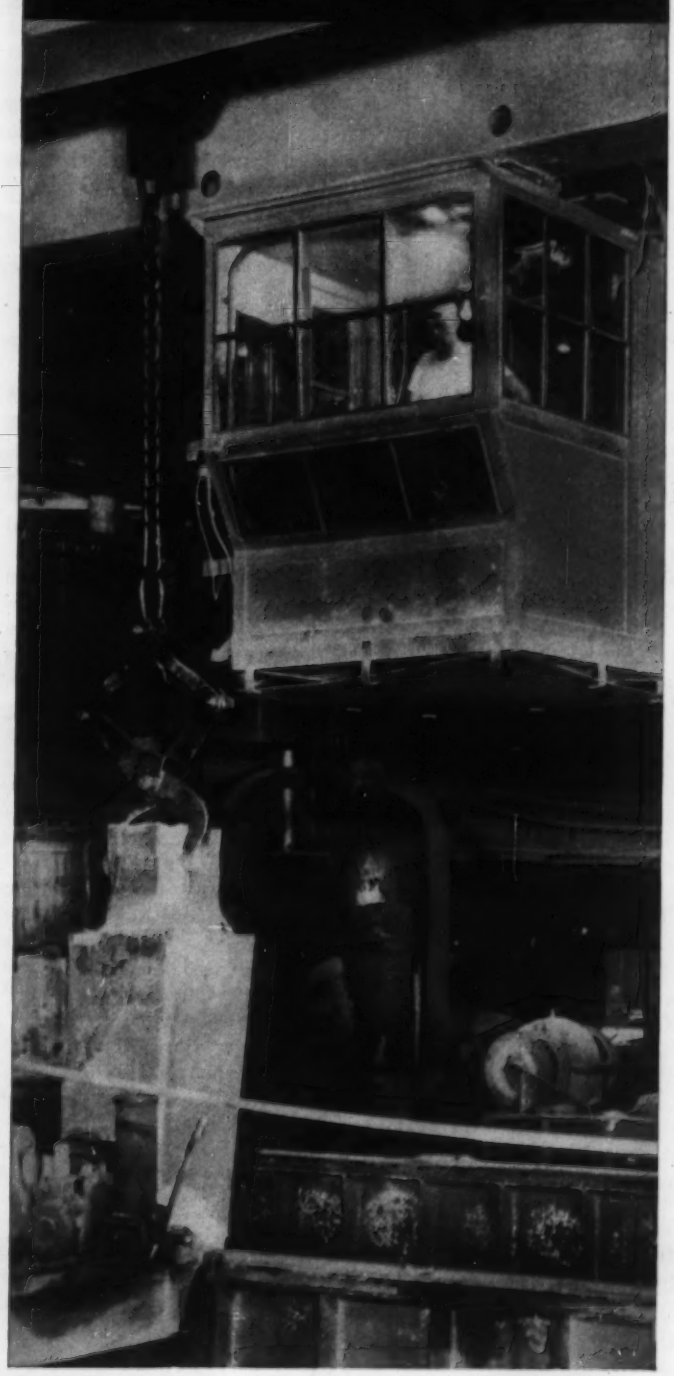
(3757)

Bridgeport Brass Co.

BRIDGEPORT BRASS COMPANY ◆ BRIDGEPORT, CONNECTICUT

Mills at Bridgeport, Conn., Indianapolis, Ind., and Adrian, Mich. Sales Offices in Principal Cities—Conveniently Located Warehouses

Steel mill solves problem of "the 30-minute crane operator"



... with DRAVO CRANE CAB CONDITIONERS

In this large Midwestern steel tube mill, heat above the 2300-degree soaking pits was so intense that crane operators had to be relieved every 30 minutes! This "heat-fume" problem was so critical that sometimes an operator collapsed from heat exhaustion and had to be removed for first aid. This was doubly hazardous since the men performing the rescue might also be overcome. Another problem was extremely dense and irritating dust and fumes plus heat encountered by the operator of the charging crane for the new electric furnaces.

Solution to these problems was the installation of Dravo Crane Cab Conditioners on the five cranes serving these "hot spots." Now, every crane operator has ample protection against fatigue and heat prostration. Every operator, alert and efficient in a *78-degree* cab, now works a complete shift without relief.

Because of Dravo Crane Cab Conditioners, the mill not only provided health and safety protection, but *also cut crane operating labor costs in half and increased production efficiency!*

No matter where they're put to work, Dravo Industrial Air Conditioners pay big dividends by providing effective protection from excessive heat, dust, dirt and fumes. We'd like to tell you more about how these efficient, rugged, easy-to-install units can help you. Why not mail the coupon now or phone the nearest Dravo sales office!

DRAVO
CORPORATION
PITTSBURGH, PENNA.
Sales Representatives in Principal Cities

Dravo Corporation, Department B-1107
Fifth and Liberty Avenues, Pittsburgh 22, Penna.

- ☐ Please send Bulletin 1301 "Crane Cab Conditioners."
- ☐ Please send Bulletin 1304 "Cool Off the Hot Spots."
- ☐ Please have a representative call at no obligation to me.

Name _____

Title _____

Company _____

Address _____

City _____ Zone ____ State _____

MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

A F Rumor

THE $84-million machine tool program is in a pause. The first group of orders for $11.2 million (STEEL, June 27, p. 43) is the story so far. In about a week, a new set of orders should be issued. It's likely it'll be for stretch presses — a goodly portion may go to Hufford Machine Works.

One Washington rumor has it that the Giddings & Lewis' tape-controlled mill has delayed the skin-mill program just long enough for the Air Force to get a good look at the machine.

Part of this review and investigation concerns the Convair development program on a similar machine. Hint: The Convair program, after being on and off, will be on again, at least through the development phases.

Show Bits

A sign that reads "Business as Usual" can be translated freely to mean that it isn't—at least not quite.

The U.S. machine tool industry is doing that kind of business.

There's nothing halfhearted about its selling job, and there's nothing mediocre about its success. Orders so far this year are surprisingly high for peacetime. There's no sign of a significant summer slump.

It has been 15 years since new machines and new models of old machines have been coming out of builders' plants at a faster clip.

The Other Side—That's the "as usual" side. The other side: Getting ready for the September machine tool shows.

By now many builders have at least one top man worrying full time over exhibit machines, personnel to man booths, show budgets and a Texan's hat full of other problems.

There's no doubt that the problems will be solved. The shows will be ready for the onslaught of firstcomers on Sept. 6. But some builders aren't sure how it will be done.

Inventory—One big puzzler has been getting space to store raw materials at Chicago. Most exhibit machines will be cutting metal, making parts. They will consume huge quantities of bars, sheets, plates, etc.

The best answer seems to be an outdoor parking area. It'll be taken over—used for a giant stockroom.

Handling—Early in June the first machines arrived at the amphitheatre. They arrived on schedules made by the Show committee: Machines to be set up farthest from the railroad siding or the truck unloading dock came in first.

There are no overhead cranes. Lift trucks and locomotive and truck cranes have been used. A mechanical press weighing over 108 tons already is in place, ready to go.

The show committee figures that some 520 machines will require more than routine handling. Trained machinery riggers are being imported from Detroit, Cleveland and other industrial centers.

Carbide Engraving

Periphery characters on accounting machine wheels are cut with carbide tools. Production is up 400 per cent

BORROWING an engraving technique from the graphic arts and combining it with carbide tooling, International Business Machines Corp., Endicott, N. Y., solved a short-run production problem and increased output more than 400 per cent.

The carbide-tipped tool stepped up the engraving process, used to engrave type face characters on steel business-machine wheels, by eliminating tool resharpening.

A major component of IBM's electric accounting machines consists of a series of intricate, circular typewheels with raised characters engraved on the periphery of each wheel.

Specials—The majority of the wheels required by IBM are mass produced with standard type faces. The big problem was meeting the demand for wheels with non-standard type faces that require special production techniques.

Because of short production runs, the company adopted the engraving method to produce the special wheels. The job consists of imparting ten characters on wheel blanks 3 in. diameter (they are made of SAE 1008 low carbon steel, on Gorton engraving machines.) It hit a snag when the high-speed steel tools dulled before a single character could be completed.

To overcome poor production rates and excessive down time for tool changing, IBM engineers tipped the original engraving tool shanks with Carboloy grade 883 cemented carbide.

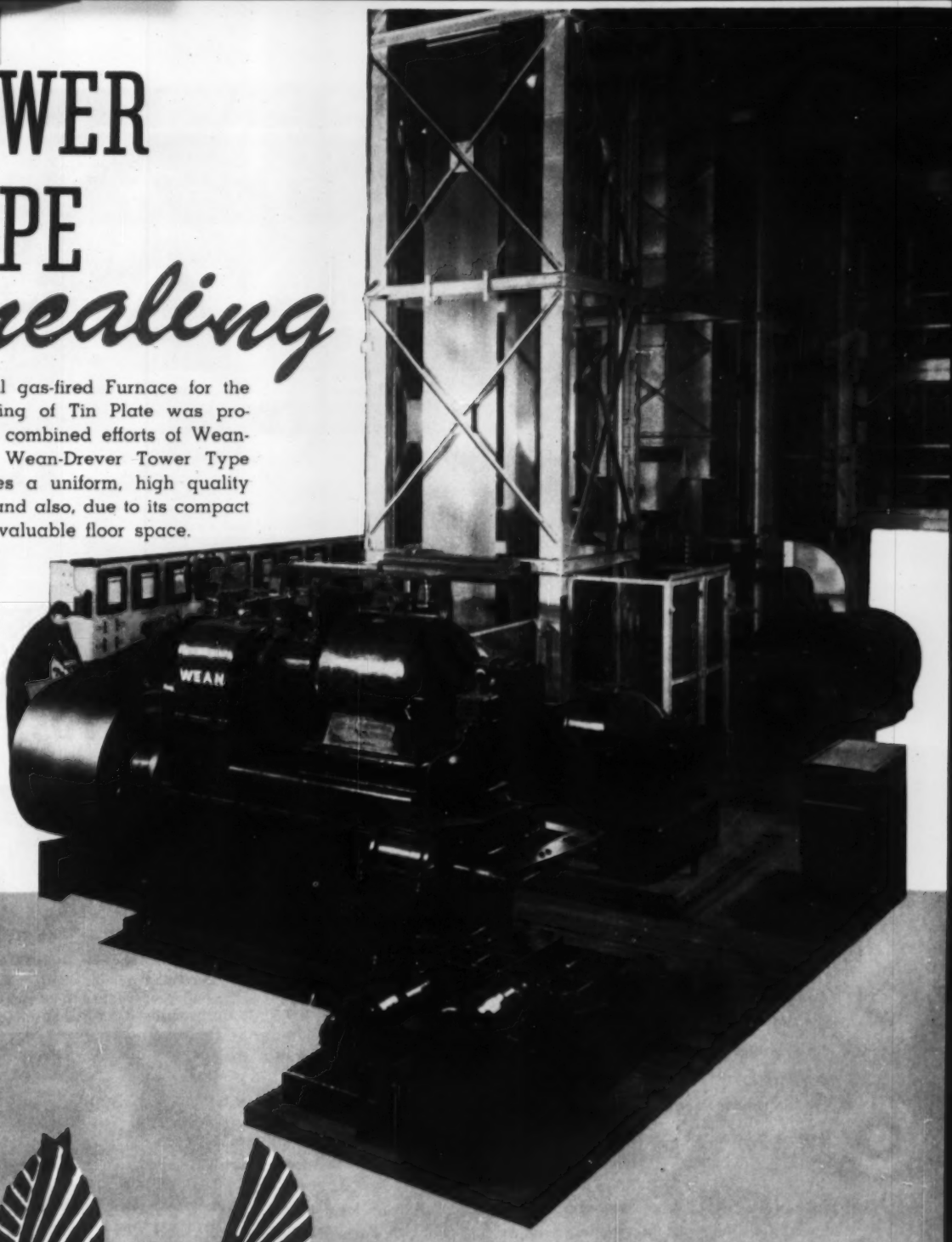
Production immediately increased to about five characters, or approximately one-half wheel per grind. Under optimum conditions, as high as 20 characters or two complete wheels are produced with no down time for tool maintenance.

Currently, production is running at the rate of 18 to 20 completed wheels per day. The machines operate at a spindle speed of 15,000 rpm.

TOWER TYPE *Annealing*

The first successful gas-fired Furnace for the continuous annealing of Tin Plate was produced through the combined efforts of Wean-Drever engineers. Wean-Drever Tower Type Annealing produces a uniform, high quality annealed product and also, due to its compact design, conserves valuable floor space.

Thus Wean engineers again have proven their leadership as Specialists in Sheet, Tin and Strip Mill Equipment.



by The

WEAN ENGINEERING *Company, Inc.*

WARREN, OHIO

How UNIONMELT Welding Makes Tough Parts Tougher . . . Faster

UNIONMELT welding produces deep penetrating welds at top speeds, and is improving the production and quality of many parts used in rugged earth-moving equipment.

A 24 in. porosity-free circumferential seam, made by UNIONMELT welding in 62 sec., has eliminated oil leakage in sealed track rollers. Welds are made in 85 in. long track roller frames in only 5 minutes.

Another UNIONMELT welding setup used in the production of tractor wheels, makes two top-quality welds in one operation . . . A weld is made in a wheel hub at the same time the hub is welded to a 27 in. diameter rim.

UNIONMELT welding is particularly efficient in the fabrication of heavy materials because it—

- **Joins metal of any thickness**—in multiple passes. Metals up to 3 in. thick can be joined in one pass.
- **Means greater economy**—uses large diameter, low cost wire.
- **Uses a.c., d.c., or c.p. power supply**—with c.p. (constant potential) voltage is unchanged throughout welding—operations are fast and efficient.

Start saving now with UNIONMELT welding . . . Call your local LINDE representative for more information, and ask for a copy of Form 7942-A, "Modern Methods of Joining Metals."

UNIONMELT welding completes a contour weld in a bulldozer C-frame in an average speed of 17 in. per minute.

UNIONMELT welding eliminates leakage. A 24 in. circumference weld made in 62 sec. seals these grease-filled track rollers.

Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY

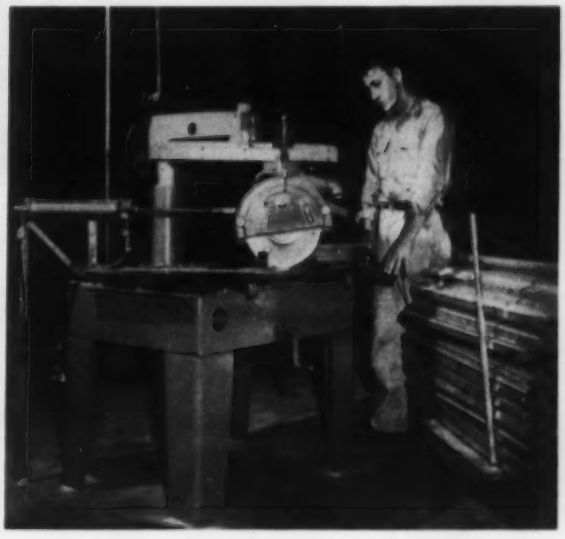
Division of Union Carbide Canada Limited, Toronto

(formerly Dominion Oxygen Company)

The terms "Linde" and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.

Linde Trade-Mark

Air Control Jumps Saw Production



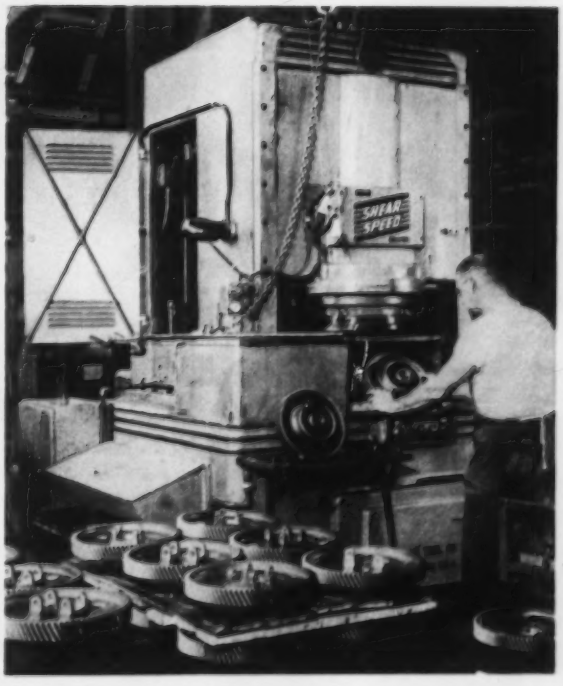
PUSHBUTTON air control on two, radial saw machines boosted production 45 per cent for a maker of jalousie windows and doors. It lessened machine down time and cut 4 man-hours daily.

At Keller Metal Products Inc., Miami, Fla., two Delta radial saws are set up—one at a right 45-degree angle, the other at a left 45-degree angle—to cut extruded aluminum strips at the rate of 2000 cuts daily.

Work Cycle—A worker places the aluminum strip into a fixture, presses a button and the fixture automatically locks and positions the strip. During cutting, the radial saw arm is driven by an air cylinder mounted on a rack at the back of the machine.

Formerly, the operation was manual and production was low. Blade breakage was high—about four a month. Through automatic operation, saw blade life has increased 150 per cent. Keller uses a saw blade 12 in. in diameter with 150 teeth. It's lubricated by a drip oiler, with wicks on each side of the blade.

Gear Shaper Handles Varied Sizes



ONE MACHINE produces 12 different gears and clusters with a minimum of tooling change at Caterpillar Tractor Co., Peoria, Ill.

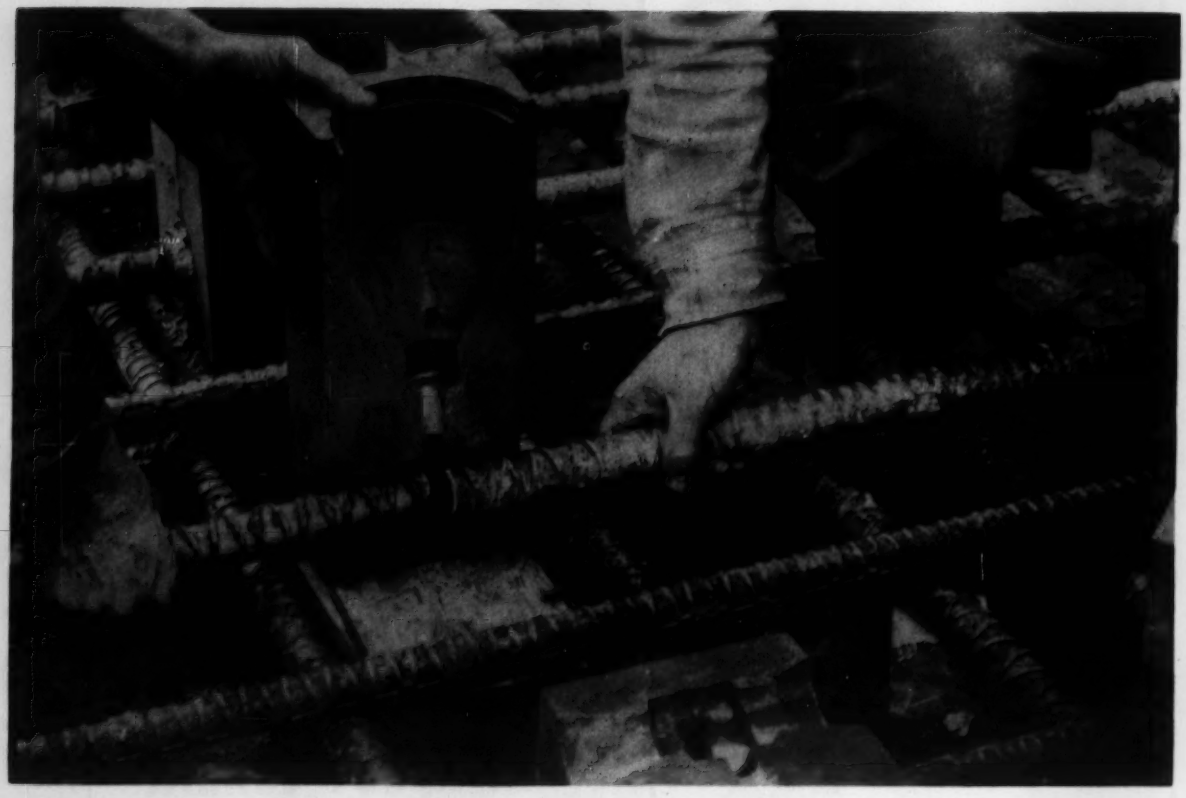
Gears range from 4½ to 8 in. in diameter, with 32 to 62 teeth. Diametral pitches run 6/8 and 8. The gear shaper is a Shear Speed, made by Michigan Tool Co., Detroit.

Tooling—Seven of the twelve gears require only three cutting head changes. Gears are stacked where possible. About half the gears are cluster type, requiring accurate tooth shaping adjacent to a shoulder.

Full peripheral support given large gears leads to even distribution of cutting loads and the elimination of deflection in the gear blank. Gears are automatically clamped to the mounting fixture. This is done pneumatically as part of the machine cycle.

Benefit—Shaping of perfect root radii avoids stress concentration areas and reduces fatigue failure. All tooling for this phase of Caterpillar's gear production is of the preshave type.

Shaped gear clusters in the photograph weigh 45 lb. The largest gear in the cluster has a 12.952-in. diameter. The smaller gear is 7.250-in. in diameter, has a diametral pitch of 8 and a face width of 1 in. Production rate of this gear is 23 an hour.



Unskilled labor assembles mold halves as . . .

Kits Speed Thermit Welding

By ORVILLE T. BARNETT
Armour Research Foundation
Chicago

TWO matching refractory mold halves, sand, a steel disc and thermit made up kits used to speed the welding of steel reinforcing bars in the new Tappan Zee bridge across the Hudson river.

Kits eliminated preheating and skilled labor. One for 1¼-in. bars contained 5 lb of thermit; the one for 2-in. bars, 8 lb.

Reinforcing bars were used in eight submerged, water-tight boxes that support 80 per cent of the dead load of the new bridge. Lengths of over 200 ft were needed; the longest bars purchased were less than 70 ft.

How It's Done—Ends of two bars are cut off square by an oxy-acetylene torch and butted about ½-in. apart. Next, two prebaked mold halves are clamped together and luting sand is used to seal the gaps between the bars and the mold.

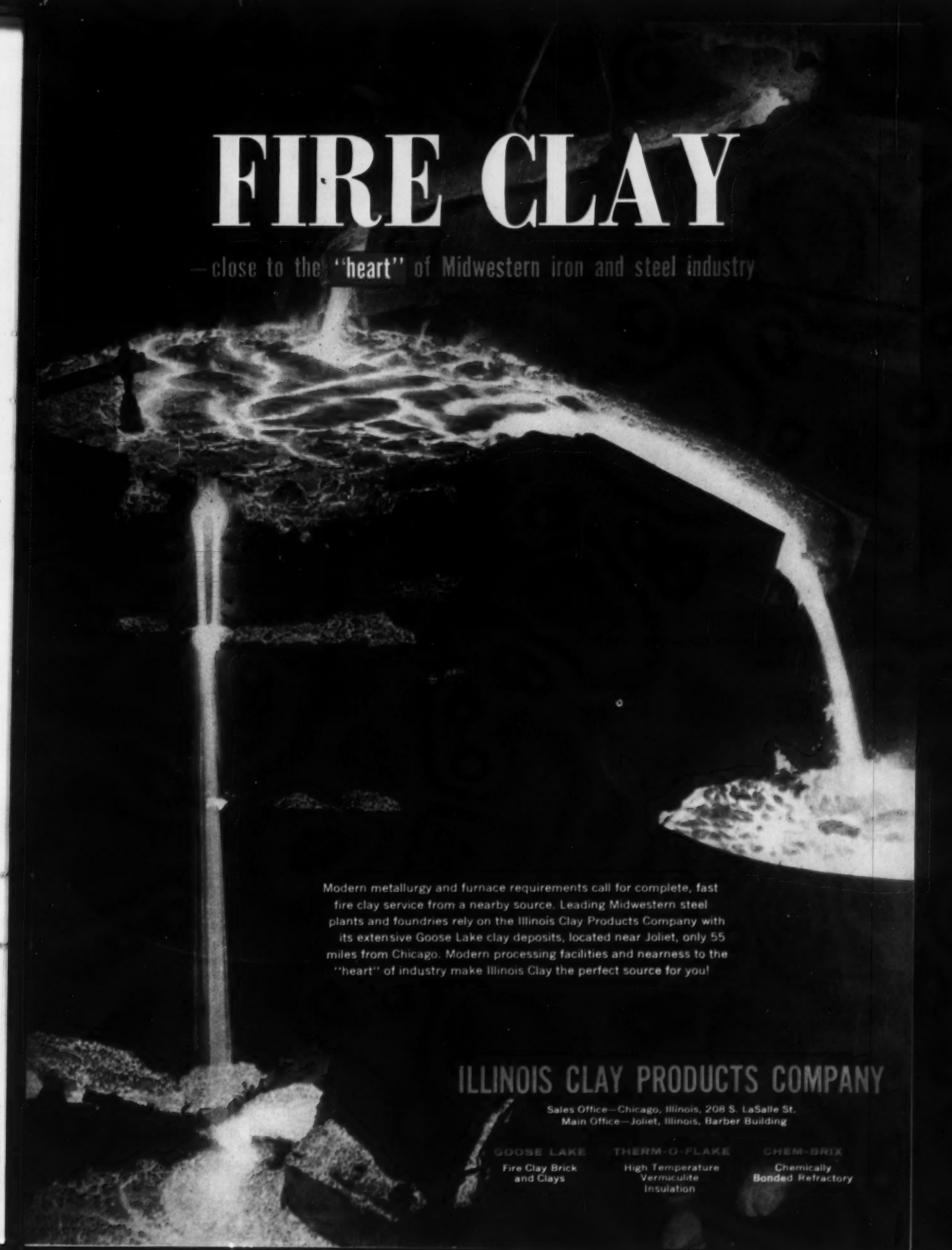
The mold halves do the work of a crucible, pouring spout and mold. Not visible in the illustration are two risers in the mold.

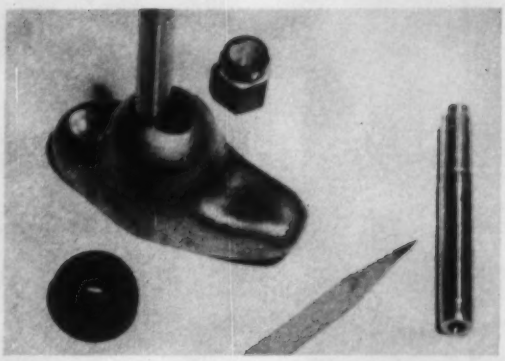
After the steel disc is put in place to stopper the pouring spout, granular thermit is poured into the mold. A small depression is made in the top of the thermit mixture for a teaspoon of starting thermit.

Within 30 seconds after the thermit is ignited, the reaction is complete and the steel has reached a temperature of 5000° F. Molten steel collects at the bottom of the conical section and the aluminum oxide slag rises to the top. The superheated steel melts the disc and flows into the mold cavity.

The Weld—As the thermit flows between the two bar ends, it washes off any oxide on the flame cut surfaces. A strong weld results upon cooling.

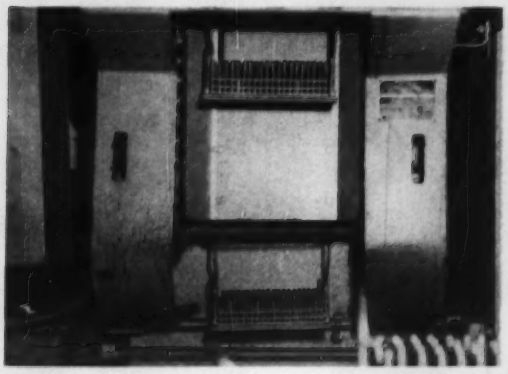
After a few minutes the mold halves are broken away from the weld. The risers and the gate are either broken or cut off. The thick collar that remains keys into the concrete and contributes to the strengthening action of the bar.


FIRE CLAY
—close to the "heart" of Midwestern iron and steel industry
Modern metallurgy and furnace requirements call for complete, fast fire clay service from a nearby source. Leading Midwestern steel plants and foundries rely on the Illinois Clay Products Company with its extensive Goose Lake clay deposits, located near Joliet, only 55 miles from Chicago. Modern processing facilities and nearness to the "heart" of industry make Illinois Clay the perfect source for you!
ILLINOIS CLAY PRODUCTS COMPANY
Sales Office—Chicago, Illinois, 208 S. LaSalle St.
Main Office—Joliet, Illinois, Barber Building
GOOSE LAKE
Fire Clay Brick and Clays
THERM-O-FLAKE
High Temperature Vermiculite Insulation
CHEM-BRIX
Chemically Bonded Refractory



These are the components that go into each rocker arm assembly. Getting chips out of the oil holes in the stud (right) would have been difficult without ultrasonics

Stacked 100 to a basket, studs move into the automatic degreaser and ultrasonic cleaner. Vibrations are directed into stud holes



Making this rocker arm assembly work depends on . . .

Ultrasonic Cleaning for Chip Removal

WHEN ENGINEERS at Pontiac motor division, General Motors Corp., eliminated the conventional rocker arm shaft on their new V-8 engine, they almost designed themselves a production bottleneck.

The new design calls for each arm to be mounted independently on its own ball-and-socket joint with studs. Studs perform two functions. They hold the assembly and lubricate the ball and socket—and that's where the cleaning comes in.

Troublesome Chips—The rocker arm ball stud is made with a 5/32-in. blind hole drilled through the center, with a 1/16-in. hole entering at right angles to the center hole at the blind end. In machining the stud, the holes become plugged with chips and cutting oil, presenting an unusual cleaning problem. Removing the oil by conventional means is easy, but getting the chips out is anything but easy.

The ultrasonic unit, built by Detrex Corp., Detroit, was installed in an automatic degreasing machine with trichlorethylene fluid as the cleansing agent. Studs are racked vertically in baskets with the open end pointing downward.

Cleaning Cycle — Baskets are hooked onto a conveyor which takes them through a spray zone in which solvent at boiling temperature bathes the studs in a flood of vapor. Moving into the next zone, parts are immersed in hot, clean solvent, and as they move through this solvent they pass over an ultrasonic unit for 10 seconds. Last stage is a trip through hot solvent vapor which dries the studs completely.

Cleaning in the ultrasonic zone is done by the mechanical energy imparted to the solution by the transducers (barium titanate crystals) which transform electrical energy into mechanical energy. Power is supplied by a radio frequency generator with an output of 0.75 kw at about 450 kc operating from a 115-v, 60-cycle power source.

ANNOUNCING...

the Beryllium Copper ROLLPIN®

Strong . . . highly resistant to corrosion . . . nonmagnetic . . . extremely conductive

Now you can use Rollpin to cut assembly and maintenance costs in a whole new group of applications. A new line made of beryllium copper, one of the strongest of the copper base alloys, opens the door to a wide variety of uses where resistance to corrosive attack, good electrical properties and other unusual characteristics are required. These slotted tubular copper spring-pins can be used in assemblies that range from plumbing fixtures to electrical instruments, particularly in conjunction with other copper base alloy components.

Rollpin has already established its ability to replace taper pins, straight pins and set screws; to serve as a rivet, dowel, hinge pin, cotter pin or stop pin . . . eliminating special machining, tapping and the need for hole reaming or precision tolerances. Driven into a hole drilled to normal production standards, it locks securely in place, yet can be readily drifted out and reused whenever necessary.

Rollpin is available in beryllium copper from .062″-diameter to .250″-diameter, and in steel and stainless steel up to .500″-diameter.

ELASTIC STOP NUT (ESNA) **CORPORATION OF AMERICA**

Dept. R35-760, Elastic Stop Nut Corporation of America
2330 Vauxhall Road, Union, New Jersey

Please send me the following free fastening information:

☐ Data on beryllium copper Rollpin

☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name _____ Title _____

Firm _____

Street _____

City _____ Zone _____ State _____

Two aluminum coating processes are licensed for commercial use. Now the ferrous metals can stand up to heat and corrosion when . . .

Excess aluminum is drained from an engine manifold. Prior treatment follows the sequence: 1. Caustic bath cleaning. 2. Steam bath cleaning. 3. Masking of parts not to be coated. 4. Fluxing in salt bath. 5. Aluminum dipping

Aluminum Guards the Surface

DIP COATING with aluminum has graduated from the auto and aircraft plants. Now it's seeking wider commercial application.

The Al-Fin process developed by Fairchild Engine & Airplane Corp., and the Aldip process developed by General Motors Corp., are finding new uses at the Arthur Tickle Engineering Works Inc., Brooklyn, N. Y. Tickle names these processes "Alumibond" and "Alumicoat."

For Joining — Alumibond (Al-Fin) is a casting process by which pure aluminum and aluminum casting alloys can be bonded to cast iron, carbon and alloy steels or stainless steel.

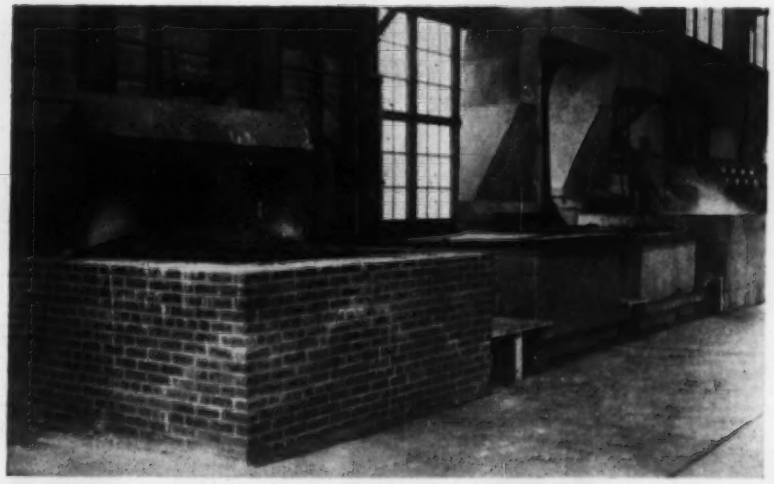
Bonding ferrous liners to air-cooled engine cylinders with cast aluminum fins is a typical use. Cleaned liners are first immersed in molten aluminum. This resembles a tinning operation, but with the aluminum penetrating into the liner to depth of 0.001 to 0.0015 in.

Casting—The liner is removed from the aluminum bath and placed in a mold which is quickly closed. While the bond is still molten, an aluminum casting is poured against it, the casting fus-

High-Temperature Antiscaling Protection from Aluminum Coating

Steel	Temp., °F	Time, Hr	Weight Change*
Untreated 18-8 chromium nickel	1350	24	−17.0%
Aluminum coated 18-8 CrNi	1350	192	+ 0.1%
Aluminum coated 18-8 CrNi	1700	48	0.0%
Aluminum coated plain steel	1350	192	+ 0.1%
Aluminum coated plain steel	1700	48	+ 0.3%

* After tapping off corrosion scale



Immersion-tube-heated wash tanks for preparing metal surfaces for Alumibond and Alumicoat processes

ing with the molten bond on the ferrous part.

This molecular bond has tensile strengths on the order of 17,000 psi. It is vibrationproof and leakproof to hot oils and gases even under high pressures.

A principal advantage of the process is weight reduction. Aluminum gears can have bonded-in steel hubs. Articles can be made of aluminum with cast iron or steel bonded-in at stress or wear points.

For Coating—Alumicoat (Aldip) is a dipping process by which steels are protected against oxidation and corrosion, especially at high temperatures. Advantages are that low alloy or mild steels can be used in place of costly high alloy and stainless steels.

The process produces a metallurgical iron-aluminum alloy bond below a 0.0005 to 0.001-in. aluminum coat. Pure aluminum gives excellent resistance to attack from corrosive media; a 5-per-cent silicon alloy gives better high-temperature resistance against corrosion.

Oxidation Cut—The coating also protects against oxidation up to temperatures at which the base metal loses useful strength. When temperatures pass the melting point of aluminum, the metal diffuses into the steel and greatly reduces high-temperature scaling. (see table).

Among applications where the coating is expected to prove useful are jet aircraft components, ships boilers, hot-air tubes and economizer elements, diesel exhaust pipes and mufflers and petroleum refinery parts.

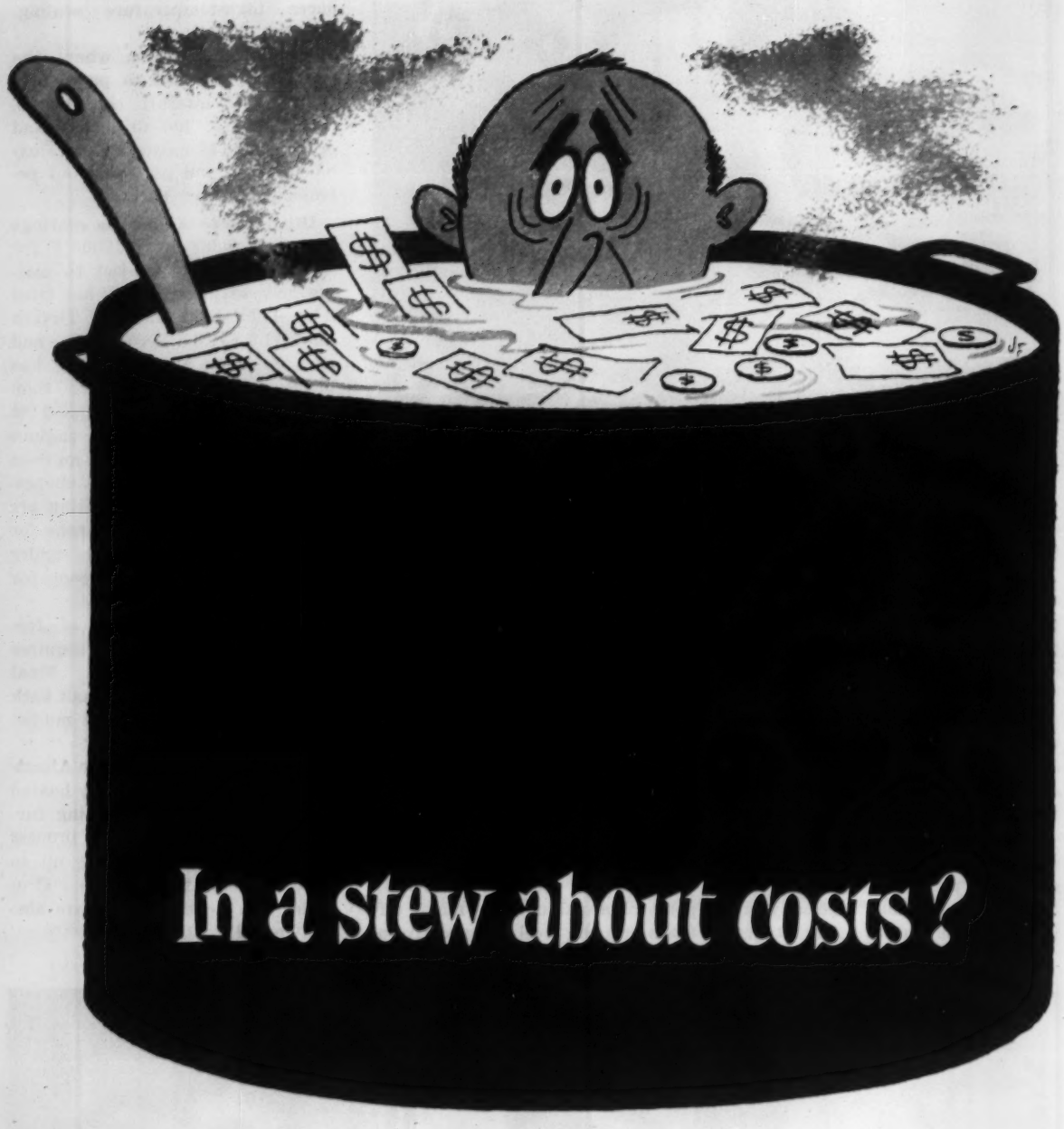
Other Uses—Aluminum coatings open new fields up to 1900° F for lower-class steels subject to scaling and corrosion. Tickle has tried it on 4120 steels and 1722 Timken alloy (1.5 Cr, 0.5 Mn plus Va) and says in some applications it has better corrosion resistance than stainless. It has been applied to plenum chambers for jet engines after fabrication and gives an even coating inside such complex shapes.

Under test with the coating are gas turbine blades and pistons for free-piston generators. Also under test are 100, coated steel spools for aluminum wire.

Equipment—Processing of ferrous metals for Alumicoat requires normal cleaning of parts. Final operation is in a patented salt bath which floats on top of the molten aluminum.

Salt bath furnaces for the Alumicoat process are electrically heated in the Tickle plant. Dipping furnaces for the Alumibond process are gas fired and operate up to 1300°F metal temperature. Crucibles and cleaning tanks are also gas heated.

Gas-fired furnaces for Alumibond process at Arthur Tickle Engineering Works. Left and center: Pots for dip-coating ferrous parts with aluminum. Right: Pit-type crucibles for aluminum casting



think of your Kaiser Aluminum

YOUR Kaiser Aluminum Distributor can *cut* your unnecessary raw material outlay . . . *cut* your handling, insurance and depreciation costs . . . *raise* your production profits.

He can do all this if you use his warehouse as your own! He carries a wide variety of aluminum: almost any size, shape or alloy—slit, sawed or sheared. By using his supplies, you can cut down your own stock, increase your working capital and reduce your carrying costs. Profit-robbing storage space can be converted into room for production.

And his services don't stop there! He's geared to meet your emergency needs the minute you call. Because of his wide experience in the metals field he can specify the exact type of aluminum your product requires. He can suggest methods of using aluminum more economically. He can supply you with small quantities for experimental work.

All these services mean more profits for you because they lower your costs. Take advantage of the *personalized service* offered by your Kaiser Aluminum Distributor. Call him today!

(Advertisement)

ATLANTA, GEORGIA
Warehouse Division, Atlantic Steel Co. Phone: Emerson 3451
BALTIMORE, MARYLAND
Hill-Chase Steel Co. of Maryland Phone: Peabody 2-7300
BEAUMONT, TEXAS Standard Brass & Mfg. Co. Phone: 4-2641
BIRMINGHAM, ALABAMA Hanna Steel Corporation Phone: 9-2127
CHICAGO METROPOLITAN AREA
Fullerton Steel & Wire Co. Phone: Merrimac 7-2700
Korhumel Steel & Aluminum Co. Phone: Ambassador 2-6700
Evanston, Illinois
Miratile Mfg. Company Phone: Hudson 8-2200
(Serves House Trailer Industry only)
CINCINNATI, OHIO
Morrison-Drabner Steel Co. Phone: Wabash 1-4480
CLEVELAND, OHIO
Copper & Brass Sales, Inc. Phone: Endicott 1-6757
Nottingham Steel Company Phone: Atlantic 1-5100
DALLAS, TEXAS
Delta Metals, Inc. Phone: Logan 7443
Earle M. Jorgensen Co. Phone: Riverside 1761
DAVENPORT, IOWA Nichols Wire & Aluminum Co. Phone: 3-1895
DETROIT, MICHIGAN
Copper & Brass Sales, Inc. Phone: Lorain 7-3380
Steel & Aluminum Products Corp. Phone: Vermont 6-9285
GRAND RAPIDS, MICHIGAN
Copper & Brass Sales, Inc. Phone: Empire 1-6681
HONOLULU, T. H. Permanente Cement Co. Phone: 5-2541
HOUSTON, TEXAS
Earle M. Jorgensen Co. Phone: Orchard 1621
Standard Brass & Mfg. Co. Phone: Blackstone 6531
INDIANAPOLIS, INDIANA
Hubbell Metals Inc. Phone: Hickory 9261
F. H. Langsenkamp Company Phone: Imperial 4321
KANSAS CITY, MISSOURI Hubbell Metals Inc. Phone: Baltimore 7760
LOS ANGELES, CALIFORNIA
Eureka Metals Supply Co. Phone: Mutual 7286
Earle M. Jorgensen Co. Phone: Lorain 7-1122
Reliance Steel Company Phone: Adams 3-3193
MIAMI, FLORIDA Fullerton Metals Co. Phone: 84-3165—84-2490
MILWAUKEE, WISCONSIN
Korhumel Steel & Aluminum Corp. of Wis. Phone: Evergreen 4-6000
MINNEAPOLIS, MINNESOTA
Korhumel Steel & Aluminum Co. Phone: Geneva 2661
NEW ORLEANS, LOUISIANA
Orleans Steel Products Co., Inc. Phone: Raymond 2116
Standard Brass & Mfg. Co. Phone: Auburn 1381
NEW YORK METROPOLITAN AREA
T. E. Conklin Brass & Copper Co., Inc. Phone: Walker 5-7500
A. R. Purdy Company, Inc., Lyndhurst, N. J.
Lyndhurst: Phone Webster 9-8100 New York: Phone Chelsea 3-4455
Newark: Phone Humboldt 2-5566
OAKLAND, CALIFORNIA
American Brass & Copper Co. Phone: Higate 4-2366
Gilmore Steel & Supply Co. Phone: Glencourt 1-1680
Earle M. Jorgensen Co. Phone: Higate 4-2030
PHILADELPHIA, PENNSYLVANIA
Hill-Chase & Company, Inc. Phone: Delaware 6-5400
PITTSBURGH, PENNSYLVANIA
William M. Orr Co., Inc. Phone: Churchill 2-3000
PORT ARTHUR, TEXAS Standard Brass & Mfg. Co. Phone: 5-9377

Distributor

PORTLAND, OREGON
Eagle Metals Inc. of Oregon Phone: Tuxedo 5201
SAN FRANCISCO, CALIFORNIA
Gilmore Steel & Supply Co. Phone: Klondike 2-0511
SEATTLE, WASHINGTON Eagle Metals Company Phone: Lander 9974
SHREVEPORT, LOUISIANA Standard Brass & Mfg. Co. Phone: 2-9483
SPOKANE, WASHINGTON
Eagle Metals Company Phone: Keystone 0587
ST. LOUIS, MISSOURI Hubbell Metals Inc. Phone: Franklin 1-0212
SYRACUSE, NEW YORK A. R. Purdy Co., Inc. Phone: Syracuse 72-6677
TULSA, OKLAHOMA Earle M. Jorgensen Co. Phone: 85-1511
WICHITA, KANSAS
General Metals, Inc. Phone: Amhurst 7-1208—7-1209

Open hearth rebuilding speeded as . . .

Lift Trucks Take the Bumps

THREE specially designed, high under-clearance fork lift trucks are helping Inland Steel Co. lick "rough road" problems in open hearth handling. The company uses fork lift trucks at its No. 2 shop in Indiana Harbor in round-the-clock refractory maintenance.

Loaded lift trucks must cross railroad tracks running parallel to the 24 furnaces. These tracks have a slag base fill, and track height is sometimes as much as 2 in. above floor level. Standard trucks just weren't the answer in this application.

Double the Clearance—This increased under-carriage clearance is achieved without impairing either the power or maneuverability of the trucks. Where conventional trucks had 20 in. driving wheels and 15 in. steering tires, the modified design increases these dimensions to 26 and 17¾ in. respectively.

A special type of quadrant steering mechanism compensates for acute wheel shock encountered in moving over the raised tracks. Despite these design changes, overall maneuverability of the truck has been decreased by only 1 in.

Job Sequence—Brick is moved into the open hearth shop by freight car and unloaded by lift truck to temporary storage on the open hearth floor. It is moved as required to the work area on pallet loads which average 3200 lb. Pallet size is 36 x 42 in.

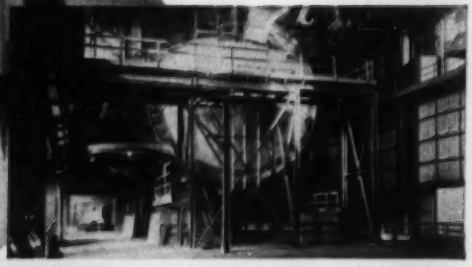
The shop is one-half mile long and the work area may be anywhere within it. The trucks frequently handle two pallet loads at a time with both speed and safety.

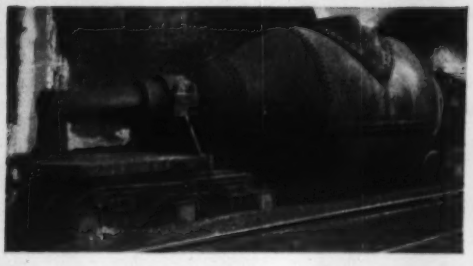
Trucks are 6000-lb diesel models equipped with torque converters. Modifications originated with Inland's open hearth operating and maintenance personnel. Lift Truck Service Co., Chicago, and the truck builder, Buda Division of Allis-Chalmers Mfg. Co., co-operated in making the necessary changes.

A. P. GREEN
KX-99

In...

Complete Blast Furnace Linings
Hot Metal Mixers
Hot Metal Cars





Resist Carbon Monoxide Disintegration... Slag Action... Chemical Action and Abrasion

Fifteen leading steel companies have proved KX-99 Blast Furnace Brick in service. KX-99 were developed to meet the service requirements in the Steel Industry and are recommended for Complete Blast Furnace Linings, Hot Metal Mixers and Hot Metal Cars.

Check These Outstanding Properties of KX-99

1. Special high fired, Missouri super duty brick.
2. No sign of carbon monoxide disintegration in 1000 hour test at 900°F.
3. Apparent porosity in the range of 8 to 12 per cent with an average of 10 per cent.
4. Bulk density in the range of 2.30 to 2.40 grams per cubic centimeter.
5. Average modulus of rupture 1800 to 2500 pounds per square inch.

For detailed information on service and specific recommendations—contact your local A. P. Green Representative or write

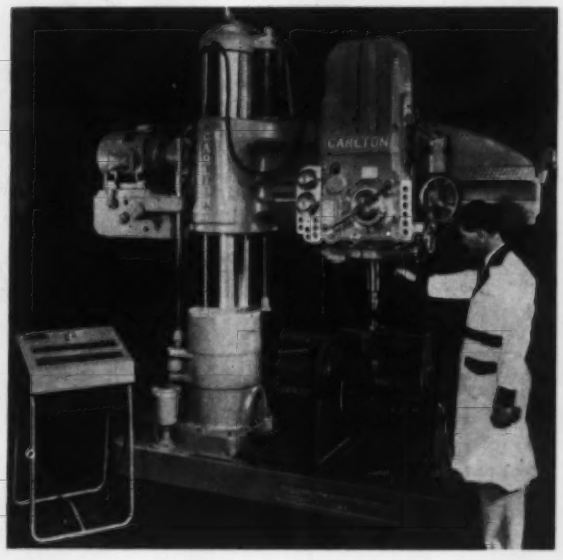
A. P. Green REFRACTORY PRODUCTS

KX-99 Blast Furnace Brick are manufactured to extremely close tolerances . . . uniform in dimensions . . . free from warpage.

A. P. GREEN FIRE BRICK COMPANY
Mexico, Missouri, U. S. A.
PLANTS: Mexico, Mo., Woodbridge, N. J., Sulphur Springs, Texas
In Canada:
A. P. GREEN FIRE BRICK COMPANY, LTD.
Toronto 15, Ontario

A COMPLETE LINE OF FIRE-CLAY REFRACTORIES

Radial Drill Features Preselector and Program Systems



Faster, more economical hole drilling production is offered by new speed-feed preselector and program systems.

Programming allows planning and presetting of speeds and feeds for an entire drilling program. Data giving the sequence of drilling operations and the correct speeds and feeds are transferred to the programming console.

The programming console contains an indexing dial which shows the operation sequence number being performed. The operator has local control and can perform operations out of sequence by manually advancing or reversing the indexing dial.

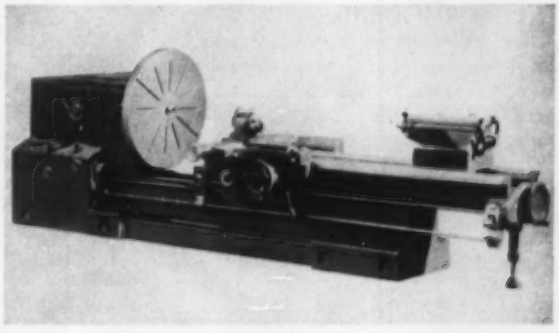
For less lengthy or complicated drilling jobs, the programming unit may be disconnected through a selector switch; the preselector then becomes active. The preselector saves time by allowing the operator to select the speed and feed for the next operation while the machine is cutting. Drills may be purchased with the preselector alone. *Write:* Carlton Machine Tool Co., Cincinnati 25, O. *Phone:* Kirby 1-3515

Extension Bed Gap Lathe Has Power Actuated Components

The Imperial gap lathe swings 24½ in. over the ways and 42 in. through the gap. All heavy components, including the heavy-duty tailstock and the sliding upper bed, are power actuated—no operator effort is required to move them.

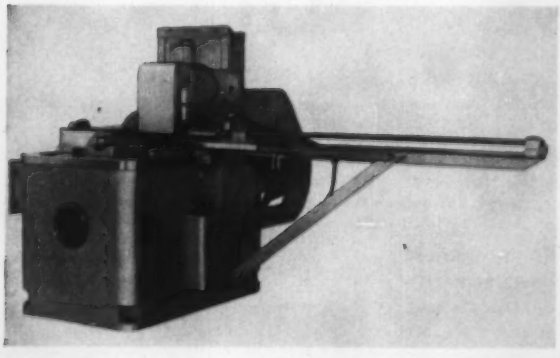
The lathe is arranged for a 10 or 20-hp main drive motor. With a single-speed motor the new lathe delivers 18 spindle speeds, 11 to 666 rpm or 16 to 1000 rpm. With a two-speed motor 36 spindle speeds are available ranging from 5 to 666 rpm or 8 to 1000 rpm.

Headstock gears are shaved and hardened and the entire gear train is lubricated automatically with an oil spray. A quick change gear box offers 60 feeds. The gap type carriage has 166 sq in. of bearing surface on the bed. Minimum bed size of the lathe is 8



ft 8½-in.; net weight is 8100 lb. *Write:* Nebel Machine Tool Corp., Cincinnati 25, O. *Phone:* Kirby 1-4114

Tube Cutoff Machine Makes 6000 Cuts an Hour



Double blade action gives a shear-type cut that eliminates distortion of the end of the tube. The machine is accurate within 0.003 in., is designed to cut off tubing of all sizes and shapes from ¼ to 4 in. OD. Rate of feed is 600 fpm. Wall thickness up to 0.125 in. may be cut; another model will make cuts up to 0.187 in. at a reduced speed.

Tubing remains stationary during the cutting action. The cut is made by two blades actuated by the crankshaft of the machine. Burr on steel is held to a minimum. Practically no burr is left on nonferrous metals. *Write:* Grieder Industries Inc., Bowling Green, O.

NEW PRODUCTS and equipment

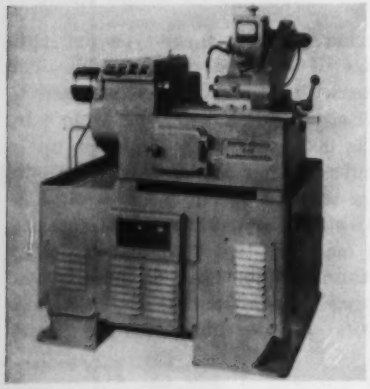
Power Press

Model 1R, a 1½-ton rigid rib, 7 in. deep-throat power press was developed for lightweight punching needs—primarily in the plastic, leather, aluminum and other light metals industries.

The press is supplied in single or double-hand control, or foot control. Only 1 to 2 lb operating pressure is needed. Driving mechanism is self-contained in the clutch collar. *Write:* Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22, Calif. *Phone:* Angelus 1-7955

Thread Milling Machine

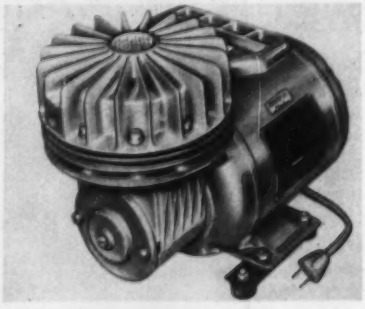
Design features of this 4 x 9 in. hydraulic machine include: 1. All hydraulic pump and coolant pump equipment. 2. Fast operating hydraulic collet closing mechanism with a hole through the center for long shafts. 3. Tachometer indicates cutter head speed, warns of dull cutter by reduction in speed. 4. Cutter spindle has taper roller bearings to permit heavy cuts at high speeds. 5. Capacity of work head spindle collet is 2 in.



Spindle speeds are variable within normal cutting range to facilitate machining of unusual alloys. Once set up, the machine is semi-automatic in operation; all controls are easily accessible to the operator. *Write:* Hanson-Whitney Co., Division of Whitney Co., 169 Bartholomew Ave., Hartford 2, Conn. *Phone:* Jackson 7-8261

Portable Air Compressor

Model 100 powers pneumatic devices where piped compressed air is not available. It is compact, self-contained and delivers up to 100 psi pressure and 3.5 cfm free air. The compressor plugs in to any 110 or 220 volt ac line.



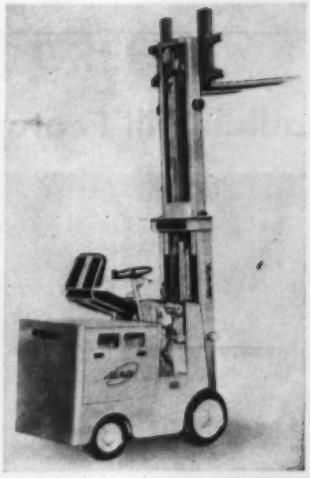
No tank or safety valve is required. Lubrication is not needed; sealed ball bearings are used throughout. *Write:* Modernair Corp., 400 Preda St., San Leandro, Calif. *Phone:* Lockhaven 9-1368

Electric Fork Truck

A 3000-lb capacity fork truck navigates narrow aisles and confined areas while retaining high tiering stability, strength, ease of maintenance and safe operation.

Over-all length with 36 in. forks is 109 in.; width is 35 in. The truck is available with 68 or 83 in. initial lift type uprights.

Other features: An improved cowl design for better driver visibility and a control on the operator's seat which sets the brake and cuts off



travel current when the operator leaves the truck. *Write:* Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, O. *Phone:* Utah 1-6200

Packaging Desiccant

New high adsorption packaging desiccant and static dehumidifier meets all government specifications, is considered ideal for packaging military equipment. It adsorbs large amounts of moisture or water vapor in lower humidity ranges. *Write:* Culligan Inc., Northbrook, Ill. *Phone:* Northbrook 1000

Abrasive Cutoff Wheels

The use of fiber glass fabric as reinforcement gives abrasive wheels that have a higher safety factor at operating speeds up to 16,000 sfm. This safety factor helps increase production and reduce time lost through accidents.

These rigid Carboflex wheels

OPEN FOR BUSINESS

"SAND SCREEN's" unique open-mesh construction lets removed material flow *right through*... instead of loading or glazing, like conventional paper and cloth. What's more, *both* sides are usable—give you 7 to 15 times longer life. Use "SAND SCREEN" wet or dry, by hand or machine. It tears and folds easily to any desired size. Cut sheets fit oscillating or vibrating machines. "SAND SCREEN" Discs give best results when used wet with CARBORUNDUM'S FASTCUT® Pad 85 Assembly. Try it—see how it slashes polishing and finishing costs in your shop. For a free sample, call your CARBORUNDUM Distributor or salesman, or write The Carborundum Company, Niagara Falls, N. Y. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

Through product quality and application "know-how"

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

C-4

Full of sound and fury, signifying PLENTY

7,700-s.f.p.m. wheel speed is "stopped" by 1/10,000 sec. stroboscopic exposure. (Wheel guard opened and coolant flow reduced to reveal cutting action.)

The *right* Abrasive Cut-Off Wheel by CARBORUNDUM will slice through metal in seconds...12 to 20 times faster than a power hacksaw. You get clean, accurate cuts, without extra deburring and smoothing needed after shearing or flame-cutting. For wet cutting, to extremely close tolerances, use Rubber Bond Wheels...for dry cutting at high speeds, use Resinoid Bond. Tough CARBOFLEX Reinforced Wheels are tops for all portable cutting and slotting—combine fast action with maximum safety. Your CARBORUNDUM Distributor or salesman knows how to help you use abrasive cutting, profitably, in your shop. Call him today. For free Booklet #6, "Metallic Cutting Off," write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

have a bursting speed of up to 40,000 sfm, as opposed to 20,000 sfm for unreinforced wheels. They are available in standard thicknesses of ⅛ to ⅜ in. and diameters of 2 to 20 in. *Write:* Carborundum Co., Niagara Falls, N. Y. *Phone:* 6631

Setscrews

A new line of high-torque setscrews is designed for greater holding power. The fasteners are available in a complete range of sizes from No. 0 to 1 in. diameter.

Up to 40 per cent more torque can be used on these socket-head setscrews. Featured are deeper sockets, harder socket walls and a self-locking knurled cup point. *Write:* Standard Pressed Steel Co., Jenkintown, Pa. *Phone:* Ogontz 7300

Germanium Plater

Compact and lightweight, this 1000-amp rectifier unit needs no special foundations. Operating costs are reduced by germanium's high over-all conversion efficiency. A minimum of moving parts and absence of aging in the germanium elements assures low maintenance costs.

Down-draft air cooling (air is drawn in horizontally through the front panel) minimizes dust and dirt intake. Single-knob, fingertip control simplifies adjustment. Control flexibility with the germanium plating power supply permits the addition of automatic control without complete replacement of the manual control. *Write:* Rectifier Dept., General Electric Co., Lynn, Mass. *Phone:* 3-6000

Corrosion-Proof Floor

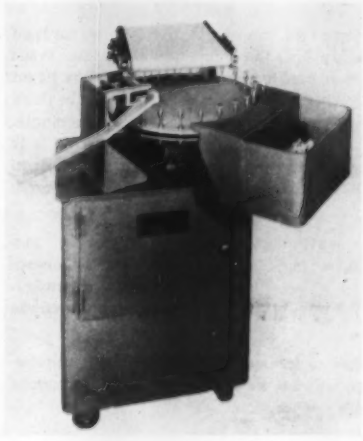
Concrete surfaces of continuous pickling tanks are protected from acid spillage by Corocrete, a new corrosion-proof material. It is applied directly over concrete, provides high abrasion resistance and strength.

Corobond is a synthetic resinous bonding cement for brick and tile featuring workability, chemical and thermal resistance.

Ceilcrete "B", a thermosetting base surfacing, is used with glass cloth to protect tank piers and pump pits. It offers extreme density and stonelike hardness. *Write:* Ceilcote Co. Inc., 4922 Ridge Rd., Cleveland 9, O. *Phone:* Shadyside 1-4220

Wiping Machine

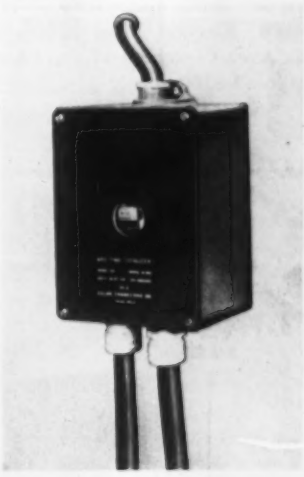
Hand wiping of stove, heater and refrigerator knobs after spray painting or dipping is eliminated by this automatic rotary wiping machine. It provides for high production wiping after mask controlled spraying.



A variable speed table, mounting 24 revolving work holders, permits production rates from 700 to 3600 wiped pieces an hour. *Write:* Conforming Matrix Corp., 345 Toledo Factories Bldg., Toledo 2, O. *Phone:* Fulton 3518

Arc Time Totalizer

This unit accurately registers the time an arc current is in use. The timer has no moving parts. A particular advantage is that current leakage or any current below a specified amount will not register on the clock.



Two models of the Arc Time Totalizer are available: Model 146 (illustrated), having one register, totalizes only the time an arc current is in use. Model 150 has two registers, one to function as Model 146; the second register totalizes the time the welding generator is in operation. *Write:* Exline Engineering Co., 1636 E. 6th St., Tulsa, Okla. *Phone:* 4-1537

Drillpress Work-holder

A new model safety work-holder features a split collar for easy installation on the column of a drillpress. It comes in eight sizes, seven for various diameter round columns and one for box column drillpresses. *Write:* Universal Vise & Tool Co., Parma, Mich. *Phone:* 2-113

Low Alloy Fluxes

Wide range of special requirements in welding low alloy steels is met by agglomerated fluxes for automatic submerged arc welding. An alloy flux is individually compounded for each job.

The fluxes can produce weld metal containing chromium, molybdenum, vanadium and nickel in varying amounts. Small changes in de-

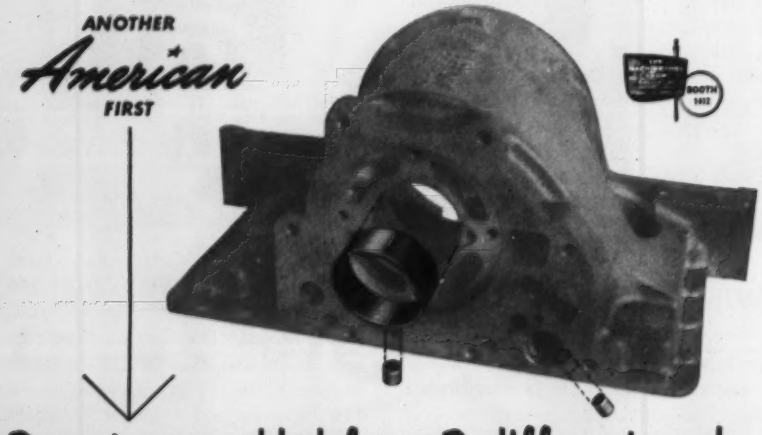
posit analysis through welding procedure control can be made without changing either the flux or wire composition.

These special fluxes can be made economically and quickly in either large or small quantities. *Write:* Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, O. *Phone:* Ivanhoe 1-8100

Electric Hack Saw

A self-powered, portable electric hack saw makes straight, circular and random cuts in practically any material, including stainless steel, tempered aluminum and mild steel.

Burr-free edge is given by a 2500-strokes-per-minute reciprocating action. *Write:* Key-Hak Division, Producers & Distributors Inc., 1321 Hanover Ave., Allentown, Pa. *Phone:* Henderson 5-5141



3 parts assembled from 3 different angles

IN ONE AUTOMATIC MACHINE OPERATION

Parts magazines (indicated by arrows) are loaded with bushing and plug parts. Push button starts machine cycle, case is automatically clamped, and bushing and two plugs are pressed into case simultaneously by hydraulic cylinders.

Designed for an automotive conveyor-type assembly line, this American Hydraulic Press inserts a bushing and two dowel plugs in an automotive transmission case — all three parts from different angles — in a single, push-button controlled, automatic cycle. It is a typical result of the service that American offers for designing and building automatic assembling and broaching equipment.

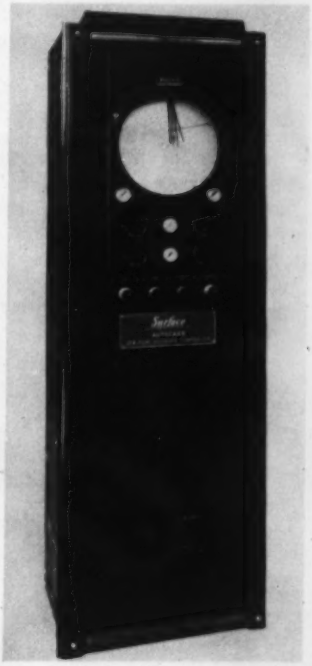
American's experience in developing machines for special purpose production operations can be of real value to your planning. Engineering versatility is a proven American asset.

A letter or phone call outlining your requirements will be welcomed — and will produce prompt cooperation.

American BROACH & MACHINE CO.
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.
ANN ARBOR, MICHIGAN
See American First — for the Best in Broaching Tools, Broaching Machines, Special Machinery

Pneumatic Controller

A dual record instrument capable of simultaneously controlling two separate processes uses a new pneumatic recording controller. Single record models are also available.



Main feature of the Autocarb continuous carbon control system is its ability to compensate automatically for any changes in work surface area as well as in gas analysis while the furnace is operating. *Write:* Surface Combustion Corp., Toledo 1, O. *Phone:* Jordan 4611

Spot Welder

Standard air operated, press-type spot welder, available in 100 kva at 50 per cent duty cycle, can be supplied with either 36, 48 or 54-in. throat depth and an electrode force up to 4300 lb at 80 psi line pressure.

This 2 ST model makes high quality welds on large production runs on a wide range of low carbon steel, on austenitic steels, aluminum and magnesium alloys, air hardenable steels and stainless steel.

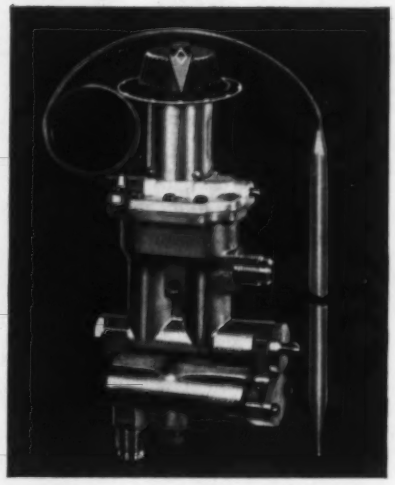
A diaphragm pressure cylinder gives smooth, rapid follow-up. Friction and inertia are minimized by

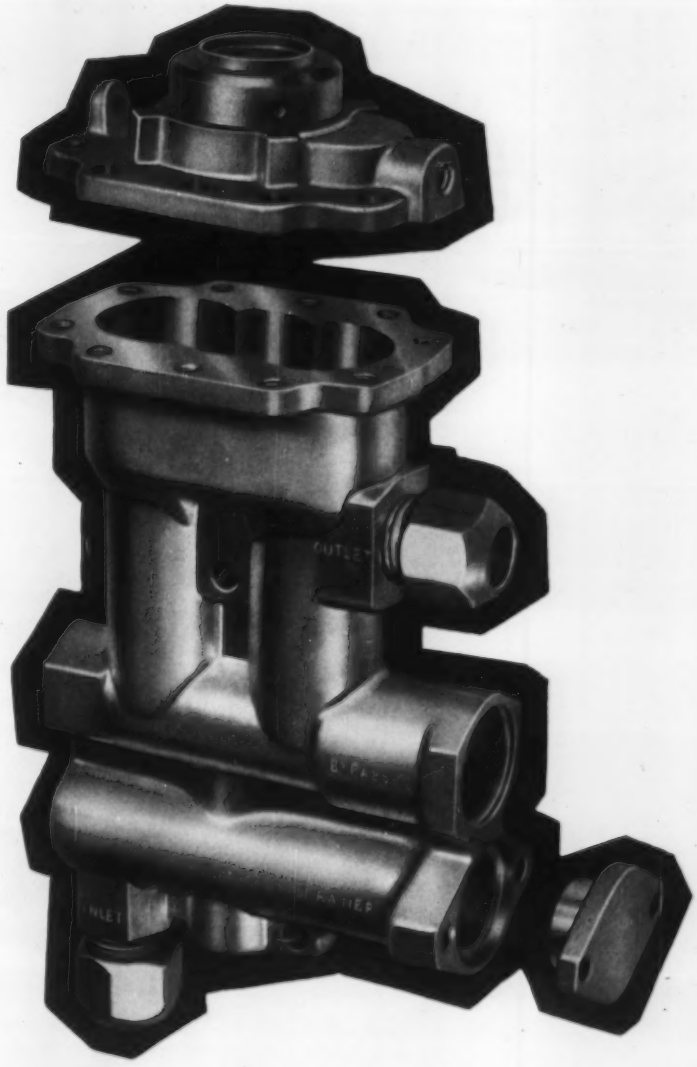
manufacture of

DETROIT SELECTAFLOW CONTROLS

greatly improved by

MUELLER BRASS CO. FORGINGS





One of the finest thermostat control mechanisms for year-around air-conditioning systems is the automatic SELECTAFLOW, a product of the Detroit Controls Corporation. To maintain the high quality of this efficient unit and at the same time speed up and simplify assembly, the body, bonnet and side cover are being forged and completely machined to close tolerances by the Mueller Brass Co. In all, thirty-four machining and finishing operations are performed. This is but one more example of how Mueller Brass Co. machined forgings have improved a product and speeded production. With a wide range of copper-base alloys for forgings, a tremendous background of product engineering, and facilities for precision finish machining, the Mueller Brass Co. can supply machined brass or bronze forgings to *your exact specifications*. It will pay you to consider Mueller Brass Co. forgings for your new or redesigned products. Write us for full color catalog and technical information.

MUELLER BRASS CO. STREAMLINE PRODUCTS

MUELLER BRASS CO.

PORT HURON 19, MICHIGAN

AUTOMATIC SHEARS
by HALLDEN
flexible design
cutting accuracy
continuous feed
rugged construction
"the shearing specialists"
THE HALLDEN MACHINE CO.
THOMASTON, CONN.
Sales Representatives
W. H. A. Robertson & Co., Ltd., Bedford, England

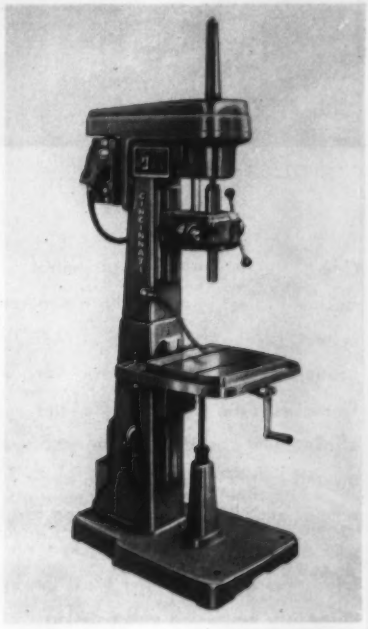
NEW PRODUCTS and equipment

a hollow, octagonal, roller bearing guided ram. A fully adjustable lower arm is made of copper alloy.

For low carbon steel minimum gage is 0.020 in., maximum 0.125 in. *Write:* Sciaky Brothers Inc., 4915 West 67th St., Chicago 38, Ill. *Phone:* Portsmouth 7-5600

Drilling Machines

Included in this line of 16-in. sliding head machines are bench and floor, single and multiple spindle models (a single-spindle, floor model is illustrated).



For easier drilling and higher production, the machines can be equipped with geared power feed. *Write*: Cincinnati Lathe & Tool Co., Cincinnati 9, O. *Phone*: Redwood 2121

Graphite Brick

Up to 31 days' service in a cupola well carrying 350 to 450 tons per day is given by a new graphite brick.

Formed on a dry press in standard 9 in. series shapes and 9 x 6 x 4 in. cupola block sizes, the graphite brick have low porosity, negligible shrinkage and uniform structure. Bricks are furnished unburned, ready to be laid up with a graphite base mortar. *Write*: Mexico Refractories Co., Mexico, Mo.

Your latest reference to better production

NEW J & L BOOKLET ON

EXTRUDED SECTIONS

WITH J&L EXTRUDED SECTIONS YOU CAN:

1. **ELIMINATE** time and costs in machining operations.
2. **ELIMINATE** time and costs in finishing operations.
3. **REDUCE** scrap losses practically to the zero point.
4. **ELIMINATE** the cost of castings and forgings of intricate sections requiring considerable machining.

J&L Extruded Sections are Custom-Made for you. They can be preformed to the predominating cross section of the part you wish to produce. And the range of sections is almost limitless. These sections possess the physical benefits and accurate tolerances derived from cold drawing. And you can obtain them in a wide range of analyses.

Use this handy coupon. This new booklet contains detailed information about the money and time saving advantages realized with the use of J&L Extruded Sections.

AT YOUR SERVICE
J&L
EXTRUDED SECTIONS
(HOT EXTRUDED AND COLD DRAWN)
... tailor made to your specifications
1. YOUR section is preformed to the cross section of the part you wish to produce. The range of sections is practically unlimited.
2. YOUR section can be quickly and easily produced. You can obtain it in a comparatively short time. There is less than the normal time lag in the building of dies . . . no necessity to build up inventories.
3. YOUR section is obtainable in a wide range of analyses . . . and, in addition, it will possess the physical benefits and accurate tolerances derived from cold drawing.
J&L STEEL

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*

J&L STEEL

Jones & Laughlin Steel Corporation
3 Gateway Center, Dept. 404
Pittsburgh 30, Pa.

Please send me your new Booklet on EXTRUDED SECTIONS.

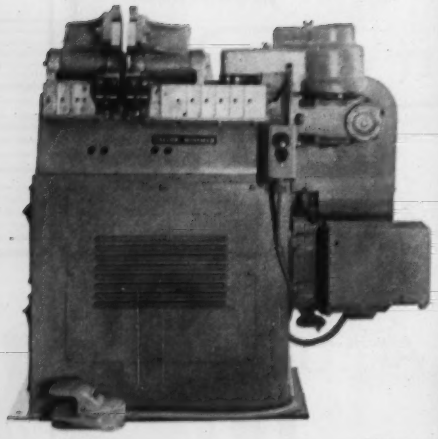
Name_____

Title_____

Company_____

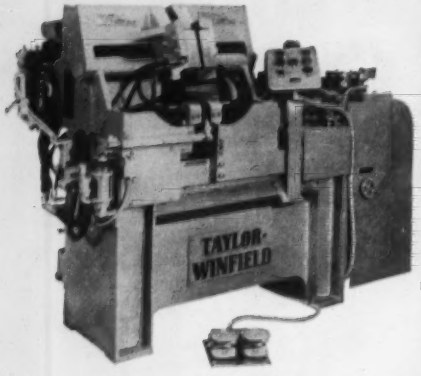
Street_____

City_____ Zone____ State_____



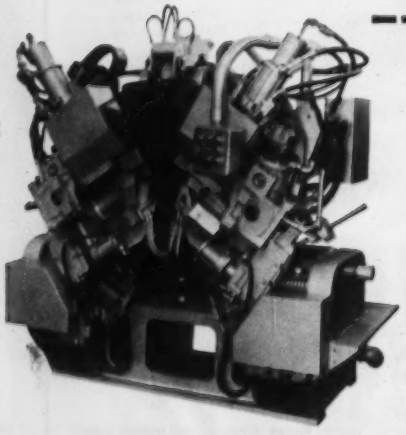
A Standard T-W Resistance Welder

Versatile uses; prompt delivery; lowest price.



Or A Standard Welder Modified

Special tooling; special time cycle; increased production; low-cost re-tooling.



Or A Special Welder Designed for Your Work

Volume production at lowest unit cost.

Resistance Welders Since 1898

TAYLOR-WINFIELD

RESISTANCE WELDERS

SPOT • PROJECTION • SEAM • FLASH BUTT

THE TAYLOR-WINFIELD CORPORATION

Sales and Service

CHARLOTTE • CHATTANOOGA
CHICAGO • CLEVELAND
DALLAS • DAYTON • DENVER
DETROIT • LOS ANGELES
PHILADELPHIA • PORTLAND,
OREGON • SEATTLE • ST. LOUIS
STAMFORD • WASHINGTON
OAKVILLE AND WINDSOR,
ONTARIO

WARREN, OHIO

NEW Literature

Write directly to the company for a copy

Air and Gas Dryers

Information and specifications of dryers for moderate quantities of air or gas which are used to actuate tools, valves or instruments are given —bulletin D-101, 4 pages. C. M. Kemp Mfg. Co., 405 East Oliver St., Baltimore 2, Md.

Gear Shapers

Operating features and advantages of two new high-speed gear cutting machines are pictured—bulletin SS-55, 8 pages. Michigan Tool Co., 7171 East McNichols Rd., Detroit 12, Mich.

Plug and Ring Gages

Screw thread standards, dimensions and tolerances, use of pipe thread gages, threaded and cylindrical plug and ring gages are covered—catalog 2G, 33 pages. Winter Brothers Co. Division, National Twist Drill & Tool Co., Rochester, Mich.

Buff Selector

Disk-type selector determines type of buff, size and spindle speed. American Buff Co., 2414 South LaSalle St., Chicago 16, Ill.

Carbide Inserts

Six sizes, 11 styles of triangular and square throw-away carbide inserts for light and medium duty machining applications are specified—bulletin 55, 6 pages. Viking Tool Co., 1000 Nichols Rd., Shelton, Conn.

Industrial Sound Systems

Use of interplant communications to simplify plant administration, coordinate production and save manpower is described—form 3R2478, 12 pages. Engineering Products Div., Radio Corp. of America, Bldg. 15-1, Camden 2, N. J.

Boiler Safety Devices

Drawings and captions cover "Basic Safety Controls for Hot Water Space Heating Boilers"—bulletin P-30, 8 pages. McDonnel & Miller Inc., 3500 North Spaulding Ave., Chicago 18, Ill.

Unit Flotation Cell

Recovery of coarse material, lower reagent cost, reduced losses in plant tailings, increased circuit and lower power consumption by use of the cell are explained—bulletin F12-B9, 4 pages. Denver Equipment Co., P.O. Box 5268, Denver 17, Colo.

GOING TO EXTREMES...

From 60-inch Wide Stainless Sheets, to the Finest Stainless Wire, Look to THE HOUSE OF STAINLESS for the Answer to Your Needs

THE NEED:
In fabricating cheese vats, the Damrow Brothers Company, dairy equipment manufacturers of Fond du Lac, Wisconsin, required stainless steel sheets of extreme width that would be flat, clean, free from surface defects, and uniform in finish. The uniform finish on these wide sheets was a "must" in order to eliminate polishing either before or after fabrication.

THE ANSWER:
To meet these requirements, the House of Stainless furnished Enduro 60-inch wide stainless steel sheets. These sheets not only provide the extreme width required, but also assure the customer of a flat sheet with the desired 2-B *strip-sheet* finish which is clean, free from surface defects and uniformly bright.

As headquarters for stainless steels in the middle west, the House of Stainless is always ready to work with you in determining what type of stainless can best meet your individual requirements. This metallurgical help is backed up by fastest possible delivery —from our complete warehouse stocks or from mill shipments through our mill placement department.

Phone LAfayette 3-7210 today.

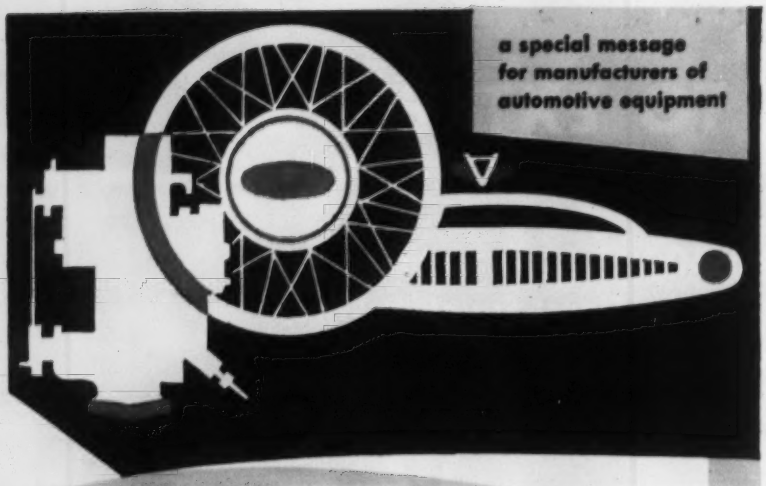
The House of Stainless — STEEL AT YOUR SERVICE — JALL

CHICAGO STEEL SERVICE COMPANY

Kildare Ave. at 45th St., Chicago 32, Illinois.
Mailing address: P.O. Box 6308, Chicago 80, Illinois

Milwaukee District Office: 757 North Broadway, Milwaukee 2, Wisc. Telephone BRoadway 3-7874
Minneapolis District Office: 3501 Hennepin Avenue, Minneapolis 8, Minn. Telephone COlfax 2602

Sales Representative at Bloomington and Rockford, Illinois; Indianapolis and South Bend, Indiana; Cedar Rapids and Bettendorf, Iowa; Grand Rapids, Michigan; Appleton, Wisconsin.



need a finish for low cost corrosion protection or showroom sparkle?

specify IRIDITE®

Whether you're finishing non-ferrous parts for high corrosion protection, paint base, or for showroom sales appeal, you can be sure of low material and production costs and peak performance when you specify Iridite. Here's what you can do with Iridite:

- **ON ZINC AND CADMIUM** you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.
- **ON COPPER . . .** Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.
- **ON ALUMINUM** Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.
- **ON MAGNESIUM** Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

Iridite is approved under government specifications

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004 06 E MONUMENT STREET • BALTIMORE 5, MD

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals.
WEST COAST LICENSEE: L. H. Butcher Co.

NEW LITERATURE

Tool Steel Guide

Technical data on more than 50 types of tool steels and cold finished products are presented—70 pages. Vanadium-Alloys Steel Co., Latrobe, Pa.

Pump Catalog

Here is a comprehensive catalog on coolant, circulating and agitating pumps—34 pages. Graymills Corp., 3705 N. Lincoln Ave., Chicago 13, Ill.

Heavy Metal

A machinable tungsten-copper-nickel alloy, twice as heavy as steel, its uses and properties are depicted—20 pages. Fansteel Metallurgical Corp., North Chicago, Ill.

Core Form Transformers

Over 60 illustrations detail single-phase, core-form power transformers 10,000 kva and above, and three-phase units 15,000 kva and up—catalog 4455, 24 pages. Pennsylvania Transformer Co., Canonsburg, Pa.

Corrosion Control

"How Zinc Controls Corrosion" tells the ways zinc increases the life of steel and reduces maintenance—32 pages. American Zinc Institute Inc., 60 East 42nd St., New York 17, New York.

Cable Conveyor

Specifications are given of systems capable of handling up to 250 lb per hanger—12 pages. Tipp Mfg. Co., Tipp City, O.

Strip Rolling Mills

Described and illustrated are 2-high strip rolling mills for both ferrous and nonferrous operations—circular 730-R, 8 pages. Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Reconditioning Bits

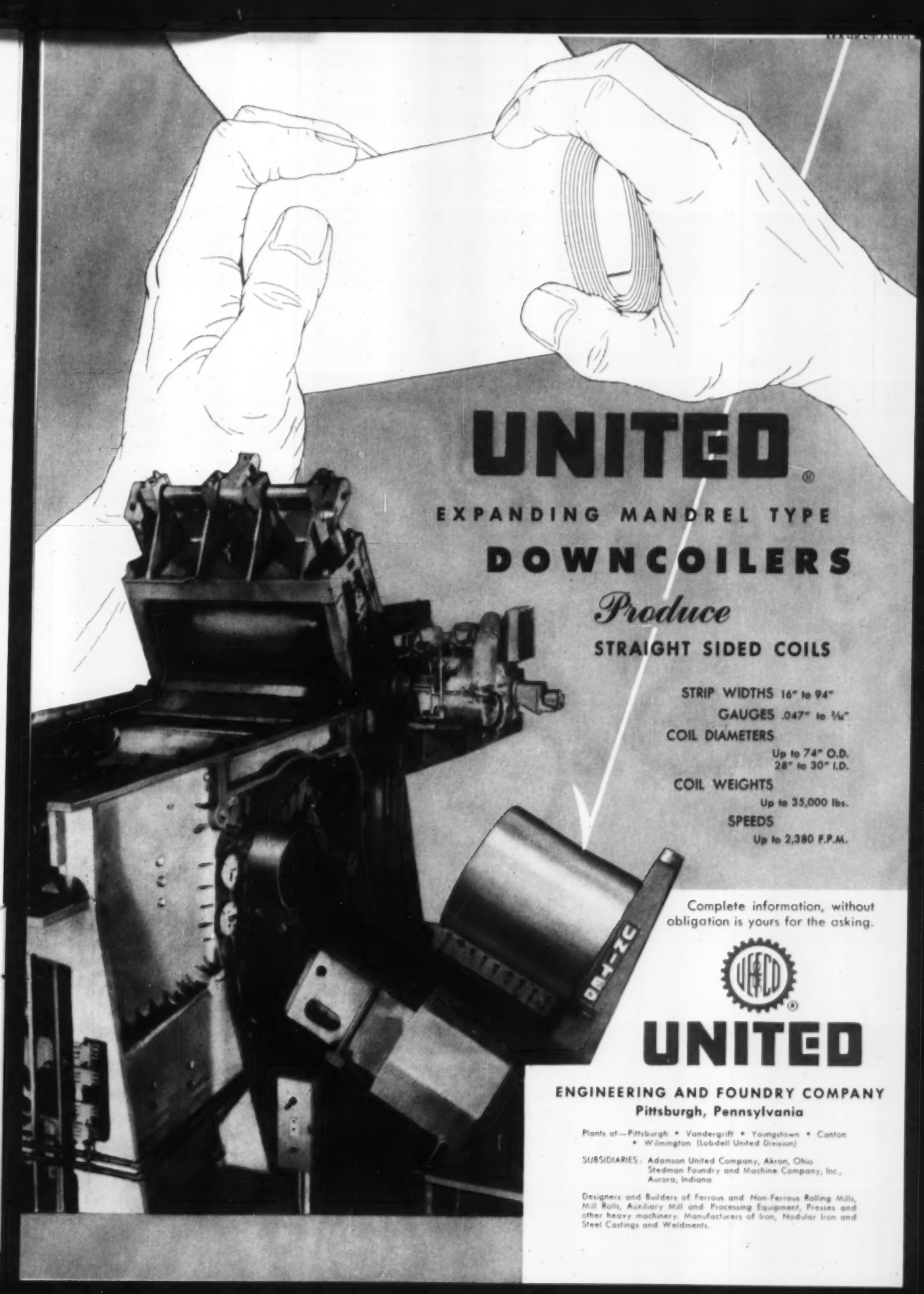
The when and how of reconditioning Kennametal drill and cutter bits is described. Kennametal Inc., Latrobe, Pa.

Variable Speed Drives

Models for constant torque applications are described—bulletin K-200, 8 pages. Cleveland Worm & Gear Co., 3249 East 80th St., Cleveland 4, O.

Heat Treating Units

Described are heat treating units featuring controlled atmosphere cooling—bulletin T-40, 4 pages. Ipsen Industries Inc., 715 South Main St., Rockford, Ill.



UNITED®

EXPANDING MANDREL TYPE

DOWNCOILERS

Produce

STRAIGHT SIDED COILS

STRIP WIDTHS 16" to 94"

GAUGES .047" to 3/16"

COIL DIAMETERS
Up to 74" O.D.
28" to 30" I.D.

COIL WEIGHTS
Up to 35,000 lbs.

SPEEDS
Up to 2,380 F.P.M.

Complete information, without obligation is yours for the asking.

UE&CO®

UNITED

ENGINEERING AND FOUNDRY COMPANY

Pittsburgh, Pennsylvania

Plants at—Pittsburgh • Vandergrift • Youngstown • Canton • Wilmington (Lobdell United Division)

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

COPPER DETERMINATION

Alloymet 2030 (65% Nickel 30% Copper 5% Iron)*

A product of close Metallurgical CONTROL for the production of low alloy steel and gray iron

Pre-alloyed master alloys are leaving an indelible mark on the iron and steel industry. The element of human error is reduced many fold, since a single alloying agent, *ALLOYMET* 2030 ingot or shot, can replace many separate inoculants. A single trial of Alloymet 2030 or its companion alloys will make you an "Alloymet regular."

For further information, write us for our booklet, "Master Alloys."

*Nominal Chemical Composition

ALTER COMPANY
Alloy Metal Division

1701 Rockingham Road, DAVENPORT IOWA
Phone 6-2561 Teletype DV 586

Market Outlook

STEEL DEMAND shows surprising vitality for this season. Usually, consumer interest lags about this time of the year, with hot weather and vacations slowing activity through July and August. Not so this summer. Mill backlogs are not shrinking appreciably. Overflow second quarter tonnage is heavier than had been indicated. Cutbacks from automotive and related lines haven't materialized in noticeable volume. New inquiry is strong, swelled substantially by the resurgence of demand from the railroads and shipbuilders, both only moderate tonnage outlets until lately. Automotive, building construction and general fabrication continue at a strong pace.

MIXED PROCEDURE—Policies on forward bookings vary. Some makers have opened books officially for tonnage beyond September on all products and on a quarterly basis. Others are booking only some items, proceeding largely on a monthly basis. Still others, those specializing in one major product, such as plates or bars, haven't opened books officially for business beyond September. In practically all cases the lag in scheduling is due to an oversold condition. One reason for this has been failure of expected cutbacks to materialize. Producers of wire and merchant pipe are not oversold. They still have tonnage open for this quarter. This is true also of some alloy specialties. On the other hand, some mills are sold out for remainder of the year on electrical sheets and enameling stock.

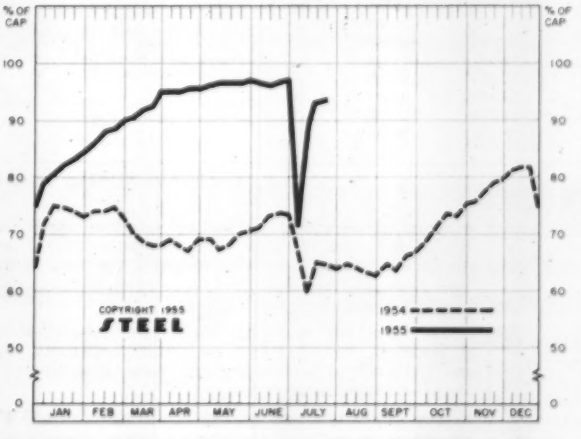
FOCAL POINT—The situation in flat-rolled steel eloquently testifies to the strong market prevailing generally. Sheetmakers expected mill schedules to be in shape by now to permit firm fourth quarter commitments. But it hasn't worked out that way. Heavy arrearages and only minor cancellations fouled up plans to such an extent that some mills are forced to turn away fourth quarter requests. Up to six weeks of production may be blanked out next quarter to care for the anticipated overflow. Even though substantial auto cutbacks should come through, orders from other directions will fill any gaps that develop in backlogs.

SURGING DEMAND—Platemakers are wrestling with a knotty scheduling problem. They hold more business than they can readily accommodate. Deliveries are running behind schedule. Still, the producers say there is no serious shortage. The plate squeeze is intensified by surging railroad demand. Structurals are similarly affected. Freight car ordering is the heaviest in many months and the carriers want steel "the day before yesterday." In June alone the roads ordered 13,365 cars.

PRODUCTION—Steelmaking advanced ½-point to 93.5 per cent of capacity last week, continuing the gradual recovery from the strike-created low. Wildcat strikes at a few points and equipment repairs have held back production.

PRICES STABILIZING—Prices in all segments of the steel market are on a higher level. STEEL's composite on finished steel stands at $126.64, against $118.45 prior to the general price action. At $40.17 the scrap composite is highest since the first week in September, 1953.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended July 24	Change	Same Week 1954	Same Week 1953
Pittsburgh	100	+ 7.5*	59.5	96
Chicago	97	+ 1.5*	69.5	99.5
Mid-Atlantic	95	0	58	97.5
Youngstown	98	0	60	106
Wheeling	92.5	— 2	83	99
Cleveland	99	— 1.5*	66	99.5
Buffalo	105	0	56	106.5
Birmingham	93.5	0	75	100
New England	83	+ 3	43	48
Cincinnati	84	— 3	55.5	91
St. Louis	88	— 4	54	85.5
Detroit	87.5	— 0.5	70	107
Western	99	— 1	80	104
National Rate	93.5	+ 0.5	64.5	96

INGOT PRODUCTION‡

	Week Ended July 24	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	141.7†	137.1	142.7	96.9
NET TONS (In thousands)	2,276†	2,202	2,292	1,557

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	July 19 1955	July 12 1955	Month Ago	June Average
(1947-1949=100)	153.9	153.8	144.9	144.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended July 19

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800
Rails, Light, 40 lb	6.217
Tie Plates	5.625
Axles, Railway	8.000
Wheels, Freight Car, 33 in. (per wheel)	52.50
Plates, Carbon	4.950
Structural Shapes	4.867
Bars, Tool Steel, Carbon (lb)	0.460
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.560
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.185
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680
Bars, H.R., Alloy	9.375
Bars, H.R., Stainless, 303 (lb)	0.450
Bars, H.R., Carbon	5.350
Bars, Reinforcing	5.313
Bars, C.F., Carbon	8.660
Bars, C.F., Alloy	12.175
Bars, C.F., Stainless, 302 (lb)	0.468
Sheets, H.R., Carbon	5.145
Sheets, C.R., Carbon	6.239
Sheets, Galvanized	7.690
Sheets, C.R., Stainless, 302 (lb)	0.588
Sheets, Electrical	$10.200
Strip, C.R., Carbon	7.993
Strip, C.R., Stainless, 430 (lb)	0.444
Strip, H.R., Carbon	5.350
Pipe, Black, Buttweld (100 ft)	16.366
Pipe, Galv., Buttweld (100 ft)	19.971
Pipe, Line (100 ft)	158.925
Casing, Oil Well, Carbon (100 ft)	165.120
Casing, Oil Well, Alloy (100 ft)	244.670
Tubes, Boiler (100 ft)	39.470
Tubing, Mechanical, Carbon	20.980
Tubing, Mechanical, Stainless, 304 (100 ft)	178.957
Tin Plate, Hot-dipped, 1.25 lb	8.533
Tin Plate, Electrolytic, 0.25 lb	7.233
Black Plate, Canmaking Quality	6.333
Wire, Drawn, Carbon	8.575
Wire, Drawn, Stainless, 430 (lb)	0.578
Bale Ties (bundle)	6.473
Nails, Wire, 8d Common	8.618
Wire, Barbed (80-rod spool)	7.847
Woven Wire Fence (20-rod roll)	18.635

STEEL's FINISHED STEEL PRICE INDEX*

	July 20 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	207.76†	207.76†	194.53	195.67	156.69
Index in cents per lb	5.628†	5.628†	5.270	5.306	4.245

†Preliminary

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$126.64†	$126.64†	$118.45	$117.43	$94.36
No. 2 Fdry, Pig Iron, GT	58.99	58.99	56.54	56.54	46.47
Basic Pig Iron, GT	58.49	58.49	56.04	56.04	45.97
Malleable Pig Iron, GT	59.77	59.77	57.27	57.27	47.27
Steelmaking Scrap, GT	40.17	38.67	35.00	27.33	36.75

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
†Preliminary

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	July 20 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.65	4.65	4.30	4.30	3.45
Bars, H.R., Chicago	4.65	4.65	4.30	4.30	3.45
Bars, H.R., deld. Philadelphia	4.90	4.90	4.56	4.55	3.93
Bars, C.F., Pittsburgh	5.90	5.90	5.40	5.40	4.10-4.15
Shapes, Std., Pittsburgh	4.60	4.60	4.25	4.25	3.40
Shapes, Std., Chicago	4.60	4.60	4.25	4.25	3.40
Shapes, deld., Philadelphia	4.88	4.88	4.53	4.53	3.42
Plates, Pittsburgh	4.50	4.50	4.225	4.225	3.50
Plates, Chicago	4.50	4.50	4.225	4.225	3.50
Plates, Coatesville, Pa.	4.50	4.50	4.225	4.225	3.60
Plates, Sparrows Point, Md.	4.50	4.50	4.225	4.225	3.50
Plates, Claymont, Del.	4.50	4.50	4.225	4.225	3.60
Sheets, H.R., Pittsburgh	4.325	4.325	4.05	4.05	3.35
Sheets, H.R., Chicago	4.325	4.325	4.05	4.05	3.35
Sheets, C.R., Pittsburgh	5.325	5.325	4.95	4.95	4.10
Sheets, C.R., Chicago	5.325	5.325	4.95	4.95	4.10
Sheets, C.R., Detroit	5.425	5.425	5.10	5.10	4.30
Sheets, Galv., Pittsburgh	5.85	5.85	5.45	5.45	4.40
Strip, H.R., Pittsburgh	4.325	4.325	4.05	4.425	3.25-3.50
Strip, H.R., Chicago	4.325	4.325	4.05	4.05	3.25
Strip, C.R., Pittsburgh	6.25	6.25	5.75	5.75	4.15-4.50
Strip, C.R., Chicago	6.45-6.55	6.45-6.55	5.85	6.00	4.30
Strip, C.R., Detroit	6.35-6.55	6.35-6.55	5.85	5.60-5.90	4.35-4.95
Wire, Basic, Pittsburgh	6.25	6.25	5.75	5.75	4.50
Nails, Wire, Pittsburgh	7.60	7.60	6.85	6.85	5.30
Tin plate (1.50lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.50
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$84.50	$84.50	$78.00	$78.00	$63.00
Wire Rods, ⅞-⅜" Pitts.	5.025	5.025	4.675	4.525	3.85
PIG IRON, Gross Ton					
Bessemer, Pitts.	$59.50	$59.50	$57.00	$57.00	$47.00
Basic, Valley	58.50	58.50	56.00	56.00	46.00
Basic, deld. Phila.	56.16	56.16	59.66	59.66	49.44
No. 2 Fdry, Pitts.	59.00	59.00	56.50	56.50	46.50
No. 2 Fdry, Chicago	59.00	59.00	56.50	56.50	46.50
No. 2 Fdry, Valley	59.00	59.00	56.50	56.50	46.50
No. 2 Fdry, deld. Phila.	56.66	56.66	55.16	60.16	49.94
No. 2 Fdry, Birm.	55.00	55.00	52.88	52.88	42.38
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	60.58	60.43	49.08
Malleable, Valley	59.00	59.00	56.50	56.50	46.50
Malleable, Chicago	59.00	59.00	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$39.50	$39.50	$34.50	$28.50	$41.00
No. 1 Heavy Melt, E. Pa.	42.00	39.50	37.25	24.50	33.00
No. 1 Heavy Melt, Chicago	39.00	36.00	34.00	30.00	37.25
No. 1 Heavy Melt, Valley	40.50	37.50	34.50	26.50	40.75
No. 1 Heavy Melt, Cleve.	38.50	35.00	31.50	24.50	38.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	29.50	26.50	36.75
Rails, Rerolling, Chicago	59.00	55.50	51.50	43.50	48.50
No. 1 Cast, Chicago	45.50	43.50	41.50	35.50	44.50
COKE, Net Ton					
Beehive, Furn, Connisvl.	$13.75	$13.75	$13.75	$14.75	$14.25
Beehive, Fdry, Connisvl.	16.75	16.75	16.75	16.75	15.50
Oven, Fdry, Chcago	24.50	24.50	24.50	24.50	21.00

Daily Nonferrous Price Record

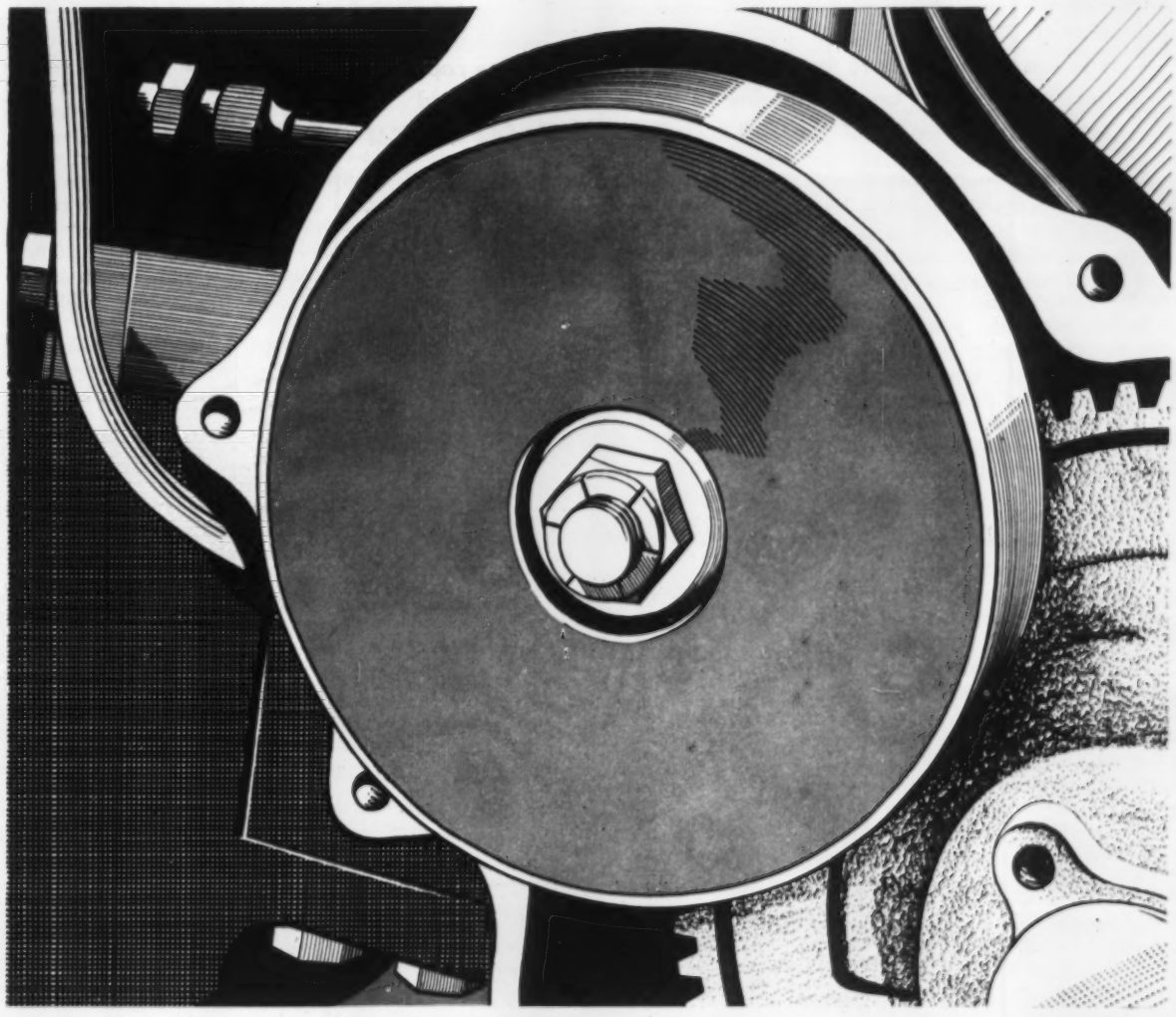
	Price July 20	Last Change	Previous Price	June Avg.	May Avg.	July 1954 Avg.
Copper	36.00	Mar. 29, 1955	33.00	36.000	36.000	30.000
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	13.800
Zinc	13.50	June 16, 1955	12.00	12.350	12.000	11.000
Tin	98.125	July 20, 1955	98.25	93.668	91.410	96.558
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	23.20	Jan. 12, 1955	22.20	23.200	23.200	21.500
Magnesium	28.50	Mar. 21, 1955	27.00	28.500	28.500	27.000

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99+%, deld.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

FLEXLOC AT WORK



MORE AND MORE FLEXLOC LOCKNUTS are being used where assemblies must be held together. This electric chain saw is a good example of an application for which FLEXLOCS are well suited.

A FLEXLOC Self-Locking Nut is used here to hold the driver gear in place. Even high-speed cutting, extreme vibration, and rough handling do not loosen the FLEXLOC locknut. These one-piece, all-metal locknuts are available in a full range of sizes. Standard FLEXLOCS are stocked by authorized industrial distributors in sizes from #4 to 2". Write for Bulletin 866 and samples. STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.

DO YOU KNOW? Standard FLEXLOCS smooth off rough bolt threads. The locking threads on all-metal FLEXLOCS are not chewed up when used on rough bolts.

Standard FLEXLOCS lock securely on bolts varying in diameter tolerances. The all-metal, resilient locking sections of the nut accommodate themselves to the diameter tolerances.

Standard FLEXLOCS are one piece, all metal. They are not affected by temperatures to 550°F. Nuts lacking these features have a more restricted temperature range.

Standard FLEXLOCS lock securely—stopped or seated—when 1½ threads of a standard bolt are past the top of the nut.

Standard FLEXLOCS are not affected by moisture, oil, dirt or grit. They lock efficiently under all conditions, regardless of the vibration encountered.

FLEXLOC®
LOCKNUT DIVISION
sps
JENKINTOWN PENNSYLVANIA

Nonferrous Metals

The long road back to supply-demand balance in the copper industry will be a hard one to travel. But 1956 could see a small surplus of the red metal

Nonferrous Metal Prices, Pages 134 & 135

COPPER USERS are beginning to think the first half of 1955 was a picnic compared with what the second half is going to be. The strike in the basic industry knocked into a cocked hat earlier predictions that the shortage would show signs of easing during the third quarter.

As the chart at right shows, stocks of refined copper are down to the lowest point since last November. They'll drop farther, because several factors make the present situation far more serious.

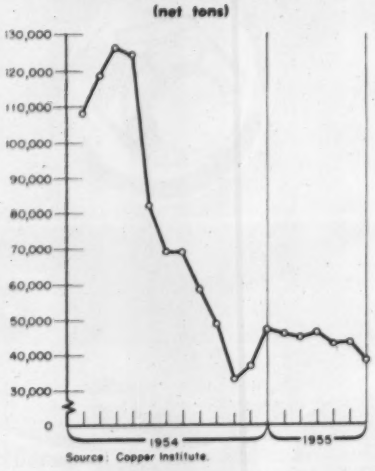
Recovery Halted — The industry didn't recover fully from the last strike situation. Going into the present stoppage, stocks already were low. In November, the industry got some aid from the government. When this strike is over, there will be little aid available because there is no more copper in the DPA inventory or elswhere in government accounts. Nobody seriously thinks the President will declare a national emergency so that stockpile metal can be released. In November, copper sold for 30 cents, and the world market was comparatively steady. Today, copper producers are hard pressed to hold to the 36-cent price in the face of declining supply, increasing demand and a world market around the 44-cent level.

If the industry can sweat it out for another six or eight months, supply should be better. Then all the producers will have to worry about is paying back the government for the metal released during 1954 and 1955. Even now it seems fairly certain that the industry will be forced to appeal for a further postponement of the pay-back date.

Heavy Losses—At this writing, it looks like the strike will be settled before it reaches its fourth week. If so, somewhere between 40,000 and 50,000 tons of copper production will be lost. The interruption of supply comes at a time when deliveries to fabricators were beginning to show promise of easing the tension. The Copper Institute reports that deliveries in June were 132,842 tons, an increase of almost 8000 tons over May. How far deliveries will drop in July can only be guessed at in view of the number of fabricators that are being forced to shut down.

Once the workers get back on the job, it will take another few days to get production rolling again. Provided there is no labor trouble in the other producing areas of the world, supply should once again start

Stocks of Refined Copper
How Low Can They Go?



the long road back to a balance with demand. Arnold Bernhard & Co. Inc., New York investment adviser, sees 1956 as a plus year for supply. The firm estimates supply will be about 1,610,000 tons against a demand of 1,585,000 tons, assuming the government will take about 100,000 tons into stockpile. By 1958, Bernhard believes supply will be 1,710,000 tons and demand 1.6 million tons, leaving a supply edge of 110,000 tons. This is predicated on 30-cent copper, which the firm sees returning in 1956. It also assumes that poorer mines will be able to operate at that price level, an assumption that not everybody in the industry will buy.

Government Looks for Way Out

The seriousness of the copper strike has caused government officials to comb through their regulations to see what can be done to assure continuation of defense work if the shortage becomes too acute. They have come up with three answers. First, they can increase the setting aside of mill space for defense purposes in plants still receiving metal from producers which are not struck. By shifting government contracts from nonoperating to operating mills, defense work could continue on what copper there is available. Second, they can cut down on the lead times set up under the Defense Materials System, forcing producers to fit defense work into their schedules. Third, they can freeze all military-generated scrap for defense use. These measures will be approved by Defense Mobilization Board only if the strike threatens government work.

Tin Price Has Three Props

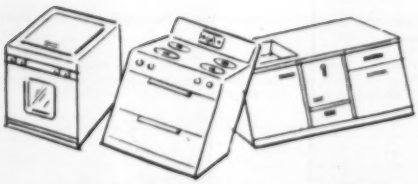
Tin has continued its steady price increase on the basis of three factors, reports Nathan Trotter & Co., New York. 1. The strikes in Singapore and the United Kingdom. 2. The report that Indonesia and France appear more likely to ratify the Tin Agreement. 3. The statistical position of tin.

The Malayan Tin Bureau reports that the Netherlands ratified the agreement in June, meaning that if France does ratify, it will fulfill the requirement for consuming nations —nine countries with at least 333 votes. The bill for approval passed the French National Assembly and has to go through the senate before the president can act upon it. Nathan Trotter says: "If the agreement is to be . . . ratified, the present price for future Straits (June average of 94.205, well below today's price) is at about the expected minimum."

Statistically, free-world consumption is running about 10,000 tons above 1954's, while production is about 2500 tons below 1954's.

Market Memos

- Primary aluminum production in June was 255,265,003 lb, making a daily average of 8,508.833 lb. While the total fell below the record set in May, a 31-day month, the daily average was up by about 49,000 lb.
- Magnesium casting shipments of 1200 tons in May declined seasonally by 8.8 per cent from April, but were 331 tons above May, 1954.
- Reliable informants in Washington tell STEEL that the chances are "much better than even" that the Defense Mobilization Board will turn thumbs down on a third round of expansion in primary aluminum.



APPLIANCES USE COLD-ROLLED FROM Newport Steel

Exceptional service and strictest adherence to exact specifications have won Newport the patronage of leading appliance manufacturers. For here are ever-expanding modern facilities for quality steel-making, including the new cold-reduction mill put into service early in 1955. Newport also offers the distinct advantage of location in the heart of the nation's fastest growing industrial area, with its economy of short-haul delivery by the best rail, water and truck lines. Examine the following creditable list of Newport products, and give us the opportunity to discuss your requirements.

PRODUCTS OF NEWPORT STEEL

Cold-Rolled Sheets
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets
Alloy Sheets and Plates
Electric Weld Line Pipe
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

ECONOMICAL WATERAIL-TRUCK DELIVERY

Newport Steel is ideally situated on the Mississippi-Ohio River system and the great Cincinnati rail-truck hub. New barge facilities, 7 major railroads and 143 motor carriers enable Newport to give economical, dependable delivery to the entire area of the Middle West and South.

Newport Steel

CORPORATION

NEWPORT, KENTUCKY

YOUR CONFIDENCE IS JUSTIFIED WHERE THIS FLAG FLIES

A SUBSIDIARY OF MERRITT-CHAPMAN & SCOTT CORPORATION

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 23.20, pigs 21.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 25.00; No. 43, 5% Si, 24.80; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 26.50; No. 195, 4.5% Cu, 0.8% Si, 25.90; No. 214, 3.8% Mg, 26.40; No. 356, 7% Si, 0.3% Mg, 24.90.

Antimony: R.M.M. brand, 99.5%, 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 36.00 deld. Conn. Valley; 36.00 deld. Midwest; Lake, 36.00 deld; Fire refined, 35.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$100 nom, per troy oz.

Lead: Common, 14.60, chemical, 14.90, corroding, 14.90, St. Louis. New York basis, add 0.20.

Lithium: 99% +, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.ob. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 28.50; notched ingot, 29.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingots; for Los Angeles, add 2.50 for both pig and ingot. Sticks 1.3 in. diameter, 49.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R, 34.00; alloy M, 36.00, 10,000 lb or more., f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $264 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $80-$85 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $6-$7.25 per lb.

Silver: Open market, 90.75 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot, 98.25; prompt, 98.00.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $4.35-$4.40 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99 + % hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 12.50; brass special, 12.75; intermediate, 13.00, E. St. Louis, freight allowed over 0.50 per pound. High grade, 13.85; special high grade, 14.00, deld. Diecasting alloy ingot No. 3, 16.50; Nos. 2 and 5, 17.00, deld.

Zirconium: Ingots, commercial grade, $14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $7.50 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 28.25-30.25; No. 12 foundry alloy (No. 2 grade), 26.50-27.50; 5% silicon alloy, 0.60 Cu max, 27.75-29.75; 13 alloy, 0.60 Cu max, 27.75-29.75; 195 alloy, 28.00-29.75; 108 alloy, 27.00-28.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 26.50-29.00; grade 2, 25.50-28.00; grade 3, 24.50-27.00; grade 4, 24.00-26.00.

Brass Ingot: Red brass, No. 115, 37.50; tin bronze No. 225, 49.50; No. 245, 42.75; high-leaded tin bronze No. 305, 40.75; No. 1 yellow No. 405, 31.75; manganese bronze No. 421, 34.75

Magnesium Alloy Ingot: AZ63A, 32.00; AZ91B, 32.00; AZ91C, 32.00; AZ92A, 32.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.74; rod, bar, wire, $1.71.

COPPER WIRE

Bare, soft, f.ob. eastern mills, 100,000-lb lots, 41.35; 30,000-lb lots, 41.48; l.c.l, 41.98. Weatherproof, 100,000-lb, 40.78; 30,000 lb, 41.03; l.c.l., 41.53. Magnet wire deld., 15,000 lb or more, 48.15; l.c.l., 48.90.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $20 per cwt; pipe, full coils, $20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.00-20.50; plates, 19.00-

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	76	115
Seamless Tubes	122	108	153
Shot, Blocks		65	

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	63.5	62.0		
0.156-0.172	53.9	52.3		
0.188	53.9	52.3		66.8
0.219-0.234	51.1	49.5		
0.250-0.281	51.1	49.5		63.7
0.313	51.1	49.5		60.8
Cold-finished				
0.375-0.547	49.9	47.5	59.8	57.2
0.563-0.688	49.9	47.5	56.9	53.7
0.750-1.000	48.7	46.3	52.1	50.6
1.063	48.7	46.3		48.9
1.125-1.500	46.9	44.6	50.4	48.9
Rolled				
1.563	45.7	43.4		
1.625-2.000	45.1	42.8		47.2
2.125-2.500	44.0	41.7		
2.563-3.375	42.7	40.5		

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finish (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	35.9	40.4	...	...
0.135-0.096	36.4	41.3	...	...
0.095-0.077	37.1	42.3	34.6	39.6
0.076-0.061	37.7	43.2	34.8	39.8
0.060-0.048	38.2	43.6	35.1	40.2
0.047-0.037	38.7	44.5	35.6	40.6
0.037-0.030	39.1	45.0	36.0	41.3
0.029-0.024	39.7	45.5	36.3	41.8
0.023-0.019	40.4	46.9	37.1	42.6
0.018-0.017	41.2	...	37.7	43.5
0.016-0.015	42.1	...	38.5	44.7
0.014	43.1	...	39.5	46.0
0.013-0.012	44.3	...	40.2	47.0
0.011	45.3	...	41.4	48.6
0.010-0.0095	46.5	...	42.5	50.2
0.009-0.0085	47.8	...	44.0	52.3
0.008-0.0075	49.4	...	45.2	54.1
0.007	50.9	...	46.7	56.4
0.006	52.5	...	48.1	61.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam, 72.240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	34.6	38.8
5050-F	35.7	39.9
3004-F	36.7	41.6
5052-F	38.4	43.4
6061-T6	39.6	44.0
2024-T4*	41.8	47.9
7075-T6*	49.6	56.2

*24-48 in. widths or diam, 72-180 in. legths.

ALUMINUM

Forging Stock: Round, Class 1, 47.80-37.30, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 53.60-41.00 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.10	2	$ 49.55
1	25.35	4	136.65
1¼	34.30	6	244.90
1½	41.00	8	368.50

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in., 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.00; lb and over, f.o.b. mill.

Plate: Hot-rolled AZ31, 59.00, 30,000 lb or more, 0.250 in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 62.00, 30,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in., 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.00; 2 in., 66.50. Tubing, 1 in. OD x 0.065 in., 90.00. Angles, 1 x 1 x ⅛-in., 75.90; 2 x 2 x ¼-in., 70.00. Channels, 5 in., 70.90. I-beams, 5 in., 70.20.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 16.50-17.50; old sheets, 14.50-15.50; borings and turnings, 9.00-10.00; crankcases, 14.50-15.50; industrial castings, 14.50-15.50.

BRASS MILL PRICES

	MILL PRODUCTS a			SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.76b	52.36c	....	54.82	32.000	32.000	31.250
Yellow Brass	46.27	37.22d	46.81	49.18	23.875	23.625	22.000
Red Brass, 85%	50.99	50.93	51.53	53.80	28.125	27.875	27.375
Low Brass, 80%	49.75	49.69	50.29	52.56	27.000	26.750	26.750
Naval Brass	49.99	44.30	57.05	53.15	22.125	21.875	21.375
Com. Bronze, 90%	52.78	52.72	53.32	56.34	29.250	29.000	28.500
Nickel Silver, 10%	60.20	62.53g	62.53	....	27.625	27.375	13.813
Phos. Bronze, A, 5%	73.03	73.53	73.53	74.71	32.250	32.000	31.000
Silicon Bronze	58.82	58.01	58.86	60.80e	31.125	30.875	30.125
Manganese Bronze	53.73	47.83	58.24	....	22.125	21.875	21.375
Muntz Metal	48.14	43.95	....	....	22.375	22.125	21.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

Copper and Brass: No. 1 heavy copper and wire, 33.50-34.00; No. 2 heavy copper and wire, 32.50-33.00; light copper, 30.50-31.00; No. 1 composition red brass, 27-00-27.50; No. 1 composition turnings, 26.50-27.00; yellow brass turnings, 15.50-16.00; new brass clippings, 21.50-23.00; light brass, 16.50-17.50; heavy yellow brass, 19.00-20.00; new brass rod ends, 20.50-22.00; auto radiators, unsweated, 20.50-21.00; cocks and faucets, 21.00-21.50; brass pipe, 21.00-21.50.

Lead: Heavy, 11.50-12.00; battery plates, 6.50-6.75; linotype and stereotype, 14.00-14.25; electrotype, 12.00-12.50; mixed babbitt, 14.50.

Magnesium: Clippings, 18.50-19.50; clean castings, 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 38.50-42.00; old sheets, 34.00-36.00; turnings, 29.50; rods, 38.50-42.00.
Nickel: Sheets and clips, 80.00-90.00; rolled anodes, 80.00-90.00; turnings, 65.00-75.00; rod ends, 80.00-90.00.
Zinc: Old zinc, 5.00-5.50; new die-cast scrap, 5.00-5.50; old die-cast scrap, 3.50-3.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)
Aluminum: 1100 clippings, 19.50-21.00; 3003 clippings, 19.50-21.00; 6151 clippings, 19.50-21.00; 5052 clippings, 19.50-21.00; 2014 clippings, 18.50-20.00; 2017 clippings, 18.50-20.00; 2024 clippings, 18.50-20.00; mixed clippings, 18.00-20.00; old sheet, 16.50-18.50; old cast, 16.50-18.50; clean old cable (free of steel), 20.00-21.00; borings and turnings, 17.00-19.00.
Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 48.00; light scrap, 43.00.
Copper and Brass: No. 1 copper, 37.50; No. 2 copper, 36.00; light copper, 34.00-34.25; refinery brass (60% copper) per dry copper content, 33.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)
Copper and Brass: No. 1 copper, 37.00-37.50; No. 2 copper, 35.00-36.00; light copper, 33.00-34.25; No. 1 composition borings, 29.50-30.50; No. 1 composition solids, 30.00-31.00; heavy yellow brass solids, 23.00-23.50; yellow brass turnings, 21.50-22.00; radiators, 23.50-24.00.

PLATING MATERIAL

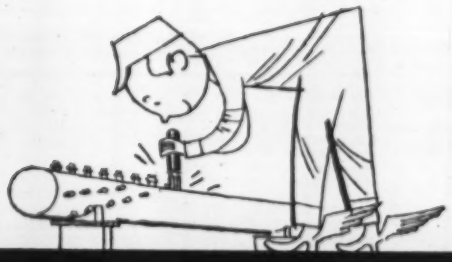
(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.
Copper: Flat-rolled, 51.42, oval, 50.92, 5000-10,000 lb; electrodeposited, 45.78, 2000-5000 lb lots; cast, 52.54, 5000-10,000 lb quantities.
Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.
Tin: Bar or slab, less than 200 lb, $1.165; 200-499 lb, $1.15, 500-999 lb, $1.145; 1000 lb or more, $1.14.
Zinc: Bar, 21.00; bar or flat top, 20.00, ton lots.

CHEMICALS

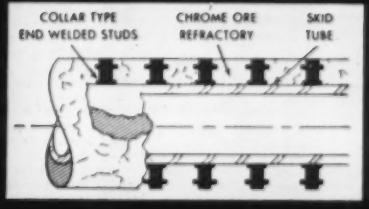
Cadmium Oxide: $2.15 per lb, in 100-lb drums.
Chromic Acid: Less than 10,000 lb, 28.50; over 10,000 lb, 27.50.
Copper Cyanide: 100 lb, 76.80; 200 lb, 76.05; 300 lb, 75.80; 400-900 lb, 75.05; 1000 lb and over, 73.05; effective Mar. 24, 1955.
Copper Sulphate: Crystal, 100 lb, 21.50; 200 lb, 18.50; 300 lb, 17.50; 400 lb, 17.00; 500-1900 lb, 15.50; 2000-10,000 lb, 15.25; 10,000 lb and up, 15.15. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.
Nickel Chloride: 100 lb, 46.50; 200 lb, 44.50; 300 lb, 43.50; 400-4900 lb, 41.50; 5000-9900 lb, 39.50; 10,000 lb and over, 38.50. All prices eastern delivery, effective Jan. 1, 1955.
Nickel Sulphate: 100 lb, 38.25; 200 lb, 36.25; 300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 lb, 31.25; 36,000 lb, 30.25. All prices eastern delivery, effective Jan. 1, 1955.
Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.
Sodium Cyanide: Egg, under 1000 lb, 19.80; 1000-19,900 lb, 18.80; 20,000 lb and over, 17.80; granular, add 1-cent premium to above.
Sodium Stannate: Less than 100 lb, 73.50; 100-600 lb, 59.10; 700-1900 lb, 56.60; 2000-9900 lb, 54.80; 10,000 lb or more, 53.70.
Stannous Chloride (Anhydrous): Less than 50 lb, $1.60; 50 lb, $1.26; 100-300 lb, $1.11; 400-900 lb, $1.086; 1000-1900 lb, $1.061; 2000-4900 lb, $1.025; 5000-19,900 lb, 96.40; 20,000 lb or more, 90.30.
Stannous Sulphate: Less than 50 lb, $1.298; 50 lb, 99.80; 100-1900 lb, 97.80; 2000 lb or more, 95.80.
Zinc Cyanide: Under 1000 lb, 54.30; 1000 lb 50 lb, 98.70; 100-1900 lb, 96.70; 2000 lb or and over, 52.30.



"STUD" NELSON
END-WELDS
INSULATION STUDS
IN A FLASH!

Encountering difficulty or high cost in securing or supporting insulation efficiently? If so, take a good look at the NELWELD* method.

NELSON* studs, end-welded in a split second, have solved hundreds of insulating problems for steel mills, all types of processing plants, and for manufacturers of boilers, heating and air conditioning equipment and tanks.



The NELSON collar stud, illustrated, is only one of many types that make insulating practical and profitable. Pins, hooks, rectangular studs, eye-bolts, split and slotted studs . . . fasteners for any kind of insulation . . . open up design possibilities without limit.

Your Nelson Field Engineer is a fastening expert, experience-trained to analyze your product designs at the blueprint stage . . . the point where remarkable savings can be realized. Write for details, indicating your problem.

Stud Nelson

Fasten it Better at Less Cost with

NELWELD

NELSON STUD WELDING
2717 Toledo Avenue
Lorain, Ohio

Please send more information on securing insulation and other cost-saving NELWELD applications.

NAME _____

COMPANY _____

ADDRESS _____

CITY AND STATE _____

NELSON STUD WELDING DIV OF GREGORY INDUSTRIES, INC LORAIN, OHIO

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown initialics. Code numbers following mill points indicate producing company. Key on page 137. Key to footnotes, page 139.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 ... $65.50

INGOTS, Alloy (NT)

Detroit R7 ... $69.00
Houston 85 ... 74.00
Midland,Pa. C18 ... 69.00
Munhall,Pa. U5 ... 69.00

BILLETS, BLOOMS & SLABS Carbon, rerolling (NT)

Aliquippa,Pa. J5 ... $68.50
Bessemer,Pa. U5 ... 68.50
Bridgeprot,Conn. N19 .. 69.00
Buffalo R2 ... 68.50
Clairton,Pa. U5 ... 68.50
Ensley,Ala. T2 ... 68.50
Fairfield,Ala. T2 ... 68.50
Fontana,Calif. K1 ... 76.00
Gary,Ind. U5 ... 68.50
Johnstown,Pa. B2 ... 68.50
Lackawanna,N.Y. B2 .. 68.50
LoneStar,Tex. L6 ... 70.00
Munhall,Pa. U5 ... 68.50
Pittsburgh J5 ... 68.50
So.Chicago,Ill. R2, U5 .. 68.50
So.Duquesne,Pa. U5 .. 68.50
Youngstown R2 ... 68.50

Carbon, Forging (NT)

Aliquippa,Pa. J5 ... $84.50
Bessemer,Pa. U5 ... 84.50
Bridgeport,Conn. N19 .. 83.00
Buffalo R2 ... 84.50
Canton,O. R2 ... 86.50
Clairton,Pa. U5 ... 84.50
Conshohocken,Pa. A3 .. 89.50
Ensley,Ala. T2 ... 84.50
Fairfield,Ala. T2 ... 84.50
Fontana,Calif. K1 ... 92.00
Gary,Ind. U5 ... 84.50
Geneva,Utah C11 ... 84.50
Houston 85 ... 89.50
Johnstown,Pa. B2 ... 84.50
Lackawanna,N.Y. B2 .. 84.50
LosAngeles B3 ... 94.00
Midland,Pa. C18 ... 84.50
Munhall,Pa. U5 ... 84.50
Pittsburgh J5 ... 84.50
Seattle B3 ... 98.00
So.Chicago R2,U5,W14 84.50
So.Duquesne,Pa. U5 .. 84.50
So.SanFrancisco B3 .. 94.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ... $86.00
Buffalo R2 ... 96.00
Canton,O. R2, T7 ... 96.00
Conshohocken,Pa. A3 .. 103.00
Detroit R7 ... 96.00
Fontana,Calif. K1 ... 115.00
Gary,Ind. U5 ... 96.00
Houston 85 ... 101.00
Ind.Harbor,Ind. Y1 .. 96.00
Johnstown,Pa. B2 ... 96.00
Lackawanna,N.Y. B2 .. 96.00
LosAngeles B3 ... 116.00
Massillon,O. R2 ... 96.00
Midland,Pa. C18 ... 96.00
Munhall,Pa. U5 ... 96.00
So.Chicago R2,U5,W14 96.00
So.Duquesne,Pa. U5 .. 96.00
Struthers,O. Y1 ... 96.00
Warren,O. C17 ... 96.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ... $103.50
Canton,O. R2 ... 103.50
Cleveland R2 ... 103.50
Gary,Ind. U5 ... 103.50
So.Chicago R2, W14 .. 103.50
So.Duquesne,Pa. U5 .. 103.50

SKELP

Aliquippa,Pa. J5 ... 4.325
LoneStar,Tex. L6 ... 4.30
Munhall,Pa. U5 ... 4.225
SparrowsPoint,Md. B2 .. 4.225
Warren,O. R2 ... 4.225
Youngstown R2, U5 .. 4.225

WIRE RODS

AlabamaCity,Ala. R2 .. 5.025
Aliquippa,Pa. J5 ... 5.025
Alton,Ill. L1 ... 5.20
Buffalo B11, W12 ... 5.025
Cleveland A7 ... 5.025
Donora,Pa. A7 ... 5.025
Fairfield,Ala. T2 ... 5.025
Houston 85 ... 5.275
IndianaHarbor,Ind. Y1 .. 5.025
Johnstown,Pa. B2 ... 5.025
Joliet,Ill. A7 ... 5.025
KansasCity,Mo. 85 ... 5.275
Kokomo,Ind. C16 ... 5.125
Los Angeles B3 ... 5.825
Minnequa,Colo. C10 ... 5.275
Monessen,Pa. P7 ... 4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ... 5.675
Portsmouth P12 ... 5.025
Roebling,N.J. R5 ... 4.775
So.Chicago,Ill. R2 ... 5.025
SparrowsPoint,Md. B2 .. 5.125
Sterling,Ill.(1) N15 ... 5.025
Sterling,Ill. N15 ... 5.125
Struthers,O. Y1 ... 5.025
Worcester,Mass. A7 ... 5.325

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 ... 4.60
Aliquippa,Pa. J5 ... 4.60
Bessemer,Ala. T2 ... 4.60
Bethlehem,Pa. B2 ... 4.65
Birmingham C15 ... 4.60
Clairton,Pa. U5 ... 4.60
Fairfield,Ala. T2 ... 4.60
Fontana,Calif. K1 ... 5.25
Gary,Ind. U5 ... 4.60
Geneva,Utah C11 ... 4.60
Houston 85 ... 4.70
Ind.Harbor,Ind. I-2 ... 4.60
Johnstown,Pa. B2 ... 4.65
KansasCity,Mo. 85 ... 4.70
Lackawanna,N.Y. B2 ... 4.65
LosAngeles B3 ... 5.30
Minnequa,Colo. C10 ... 4.90
Munhall,Pa. U5 ... 4.60
Niles,Calif. P1 ... 4.90
Portland,Oreg. O4 ... 5.35
Phoenixville,Pa. P4 ... 4.65
Seattle B3 ... 5.35
So.Chicago U5, W14 ... 4.60
So.SanFrancisco B3 ... 5.25
Torrance,Calif. C11 ... 5.30
Weirton,W.Va. W6 ... 4.60

Wide Flange

Bethlehem,Pa. B2 ... 4.65
Clairton,Pa. U5 ... 4.60
Fontana,Calif. K1 ... 5.40
Lackawanna,N.Y. B2 ... 4.65
Munhall,Pa. U5 ... 4.60
Phoenixville,Pa. P4 ... 4.85
So.Chicago,Ill. U5 ... 4.60

Alloy Std. Shapes

Clairton,Pa. U5 ... 5.65
Fontana,Calif. K1 ... 7.30
Gary,Ind. U5 ... 5.65
Houston 85 ... 5.75
Munhall,Pa. U5 ... 5.65
So.Chicago,Ill. U5 ... 5.65

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 ... 6.75
Bessemer,Ala. T2 ... 6.75
Bethlehem,Pa. B2 ... 6.80
Clairton,Pa. U5 ... 6.75
Fairfield,Ala. T2 ... 6.75
Fontana,Calif. K1 ... 7.40
Gary,Ind. U5 ... 6.75
Geneva,Utah C11 ... 6.675
Houston 85 ... 6.85
Ind.Harbor,Ind. I-2, Y1 .. 6.75
Johnstown,Pa. B2 ... 6.80
KansasCity,Mo. 85 ... 6.85
Lackawanna,N.Y. B2 ... 6.80
LosAngeles B3 ... 7.45
Munhall,Pa. U5 ... 6.75
Seattle B3 ... 7.50
So.Chicago,Ill. U5, W14 .. 6.75
So.SanFrancisco B3 ... 7.40
Struthers,O. Y1 ... 6.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ... 6.80
Lackawanna,N.Y. B2 ... 6.80
Munhall,Pa. U5 ... 6.75
So.Chicago,Ill. U5 ... 6.75

PILING

BEARING PILES

Bethlehem,Pa. B2 ... 4.65
Lackawanna,N.Y. B2 ... 4.65
Munhall,Pa. U5 ... 4.60
So.Chicago,Ill. U5 ... 4.60

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ... 5.45
Lackawanna,N.Y. B2 ... 5.45
Munhall,Pa. U5 ... 5.45
So.Chicago,Ill. U5 ... 5.45

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 ... 4.50
Aliquippa,Pa. J5 ... 4.50
Ashland,Ky.(15) A10 ... 4.50
Bessemer,Ala. T2 ... 4.50
Bridgeport,Conn. N19 .. 4.75
Buffalo R2 ... 4.50
Clairton,Pa. U5 ... 4.50
Claymont,Del. C22 ... 4.50
Cleveland J5, R2 ... 4.60
Coatesville,Pa. L7 ... 4.50
Conshohocken,Pa. A3 .. 4.50
Detroit M1 ... 4.60
Ecorse,Mich. G5 ... 4.60
Fairfield,Ala. T2 ... 4.50
Fontana,Calif.(30) K1 .. 5.15
Gary,Ind. U5 ... 4.50
Geneva,Utah C11 ... 4.50
GraniteCity,Ill. G4 ... 4.70
Harrisburg,Pa. C5 ... 4.50
Houston 85 ... 4.60
Ind.Harbor,Ind. I-2, Y1 .. 4.50
Johnstown,Pa. B2 ... 4.50
Lackawanna,N.Y. B2 ... 4.50
LoneStar,Tex. L6 ... 4.55
Mansfield,O. E6 ... 4.50
Minnequa,Colo. C10 ... 5.35
Munhall,Pa. U5 ... 4.50
Newport,Ky. N9 ... 4.50
Pittsburgh J5 ... 4.50
Riverdale,Ill. A1 ... 4.50
Seattle B3 ... 5.40
Sharon,Pa. S3 ... 4.50
So.Chicago R2, U5, W14 4.50
SparrowsPoint,Md. B2 .. 4.50
Steubenville,O. W10 ... 4.50
Warren,O. R2 ... 4.50
Weirton,W.Va. W6 ... 4.50
Youngstown R2, U5, Y1 4.50

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ... 6.30
Geneva,Utah C11 ... 5.65
Johnstown,Pa. B2 ... 5.65
SparrowsPoint,Md. B2 .. 5.65

PLATES, Wrought Iron

Economy,Pa. B14 ... 10.40

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 ... 6.725
Bessemer,Ala. T2 ... 6.725
Clairton,Pa. U5 ... 6.725
Cleveland J5, R2 ... 6.725
Coatesville,Pa. L7 ... 6.725
Conshohocken,Pa. A3 .. 6.725
Ecorse,Mich. G5 ... 6.825
Fairfield,Ala. T2 ... 6.725
Fontana,Calif.(30) K1 .. 7.375
Gary,Ind. U5 ... 6.725
Geneva,Utah C11 ... 6.725
Houston 85 ... 6.825
Ind.Harbor,Ind. I-2, Y1 .. 6.725
Johnstown,Pa. B2 ... 6.725
LosAngeles B3 ... 7.625
Munhall,Pa. U5 ... 6.725
Pittsburgh J5 ... 6.725
Seattle B3 ... 7.625
Sharon,Pa. S3 ... 6.725
So.Chicago,Ill. U5, W14 6.725
SparrowsPoint,Md. B2 .. 6.725
Youngstown U5, Y1 ... 6.725

PLATES, Alloy

Bridgeport,Conn. N19 .. 6.56
Claymont,Del. C22 ... 6.30
Coatesville,Pa. L7 ... 6.30
Fontana,Calif. K1 ... 6.95
Gary,Ind. U5 ... 6.30
Houston 85 ... 6.40
Ind.Harbor,Ind. Y1 ... 6.30
Johnstown,Pa. B2 ... 6.30
Munhall,Pa. U5 ... 6.30
Newport,Ky. N9 ... 6.30
Seattle B3 ... 7.20
Sharon,Pa. S3 ... 6.30
So.Chicago,Ill. U5, W14 .. 6.30
SparrowsPoint,Md. B2 .. 6.30
Youngstown Y1 ... 6.30

FLOOR PLATES

Cleveland J5 ... 5.575
Conshohocken,Pa. A3 .. 5.575
Harrisburg,Pa. C5 ... 5.575
Ind.Harbor,Ind. I-2 ... 5.575
Munhall,Pa. U5 ... 5.575
So.Chicago,Ill. U5 ... 5.575

PLATES, Ingot Iron

Ashland c.l. (15) A10 ... 4.75
Ashland l.c.l. (15) A10 ... 5.25
Cleveland c.l. R2 ... 5.10
Warren,O. c.l. R2 ... 5.10

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 ... 4.65
Aliquippa,Pa. J5 ... 4.65
Alton,Ill. L1 ... 4.85
Atlanta A11 ... 4.85
Bessemer,Ala. T2 ... 4.65
Birmingham C15 ... 4.65
Bridgeport,Conn. N19 .. 4.80
Buffalo R2 ... 4.65
Canton,O. R2 ... 4.75
Clairton,Pa. U5 ... 4.65
Cleveland R2 ... 4.65
Ecorse,Mich. G5 ... 4.75
Emeryville,Calif. J7 ... 5.40
Fairfield,Ala. T2 ... 4.65
FairlessHills,Pa. U5 ... 4.80
Fontana,Calif. K1 ... 5.35
Gary,Ind. U5 ... 4.65
Houston 85 ... 4.90
Ind.Harbor,Ind. I-2, Y1 .. 4.65
Johnstown,Pa. B2 ... 4.65
Joliet,Ill. P22 ... 4.65
KansasCity,Mo. 85 ... 4.90
Lackawanna,N.Y. B2 ... 4.65
LosAngeles B3 ... 5.35
Massillon,O. R2 ... 4.75
Midland,Pa. C18 ... 4.65
Milton,Pa. M18 ... 4.65
Minnequa,Colo. C10 ... 5.10
Niles,Calif. P1 ... 5.00
N.Tonawanda,N.Y. B11 .. 4.30
Pittsburg Calif. C11 ... 5.35
Pittsburgh J5 ... 4.65
Portland,Oreg. O4 ... 5.40
Seattle B3, N14 ... 5.40
So.Chicago R2, U5, W14 4.65
So.Duquesne,Pa. U5 ... 4.65
So.SanFran.,Calif. B3 ... 5.40
Sterling,Ill.(1) N15 ... 4.65
Sterling,Ill. N15 ... 4.75
Struthers,O. Y1 ... 4.65
Torrance,Calif. C11 ... 5.35
Warren,O. R2 ... 4.65
Weirton,W.Va. W6 ... 4.65
Youngstown R2, U5 ... 4.65

BARS, H.R. Leaded

Warren,O. C17 ... 6.325

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ... 5.575
Bridgeport,Conn. N19 .. 5.725
Buffalo R2 ... 5.575
Canton,O. R2, T7 ... 5.575
Clairton,Pa. U5 ... 5.575
Detroit R7 ... 5.575
Ecorse,Mich. G5 ... 5.675
Fontana,Calif. K1 ... 6.625
FairlessHills,Pa. U5 ... 5.725
Gary,Ind. U5 ... 5.575
Houston 85 ... 5.825
Ind.Harbor,Ind. I-2, Y1 5.575
Johnstown,Pa. B2 ... 5.575
KansasCity,Mo. 85 ... 5.825
Lackawanna,N.Y. B2 ... 5.575
LosAngeles B3 ... 6.625
Massillon,O. R2 ... 5.575
Midland,Pa. C18 ... 5.575
So.Chicago R2,U5,W14 5.575
So.Duquesne,Pa. U5 ... 5.575
Struthers,O. Y1 ... 5.575
Warren,O. C17 ... 5.575
Youngstown U5 ... 5.575

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 ... 6.80
Bessemer,Ala. T2 ... 6.80
Bethlehem,Pa. B2 ... 6.80
Clairton,Pa. U5 ... 6.80
Cleveland R2 ... 6.80
Ecorse,Mich. G5 ... 6.90
Fairfield,Ala. T2 ... 6.80
Fontana,Calif. K1 ... 7.50
Gary,Ind. U5 ... 6.80
Houston 85 ... 7.05
Ind.Harb.,Ind. I-2, Y1 .. 6.80
Johnstown,Pa. B2 ... 6.80
KansasCity,Mo. 85 ... 7.05
Lackawanna,N.Y. B2 ... 6.80
LosAngeles B3 ... 7.50
Pittsburgh J5 ... 6.80
Seattle B3 ... 7.55
So.Chicago W14 ... 6.80
So.Duquesne,Pa. U5 ... 6.80
So.SanFrancisco B3 ... 7.55
Struthers,O. Y1 ... 6.80
Warren,O. R2 ... 6.80
Youngstown U5 ... 6.80

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 ... 4.80

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 ... 4.65
Atlanta A11 ... 4.85
Fontana,Calif. K1 ... 5.35
Niles,Calif. P1 ... 5.00
Pittsburgh J5 ... 4.30
Portland,Oreg. O4 ... 5.05
SanFrancisco S7 ... 4.70

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 ... 5.65
Gary,Ind. U5 ... 5.65
Houston 85 ... 5.90
KansasCity,Mo. 85 ... 5.90
Youngstown U5 ... 5.65

BARS, C.F. Loaded

Ambridge,Pa. W18 ... 7.525
Camden,N.J. P13 ... 8.50
Chicago W18 ... 7.525
Cleveland C20 ... 7.85
Monaca,Pa. S17 ... 8.325
Newark,N.J. W18 ... 7.70
SpringCity,Pa. K3 ... 8.50
Warren,O. C17 ... 8.325

BARS, Cold-Finished Carbon

Ambridge Pa. W18 ... 5.90
BeaverFalls,Pa. M12 ... 5.90
BeaverFalls,Pa. R2 ... 5.90
Buffalo B5 ... 5.95
Camden,N.J. P13 ... 6.35
Carnegie,Pa. C12 ... 5.90
Chicago W18 ... 5.90
Cleveland A7, C20 ... 5.90
Detroit R7 ... 5.90
Detroit B5, P17 ... 6.10
Donora,Pa. A7 ... 5.90
Elyria,O. W8 ... 5.90
FranklinPark,Ill. N5 .. 5.90
Gary,Ind. R2 ... 5.90
GreenBay,Wis. F7 ... 5.90
Hammond,Ind. L2, M13 ... 5.90
Hartford,Conn. R2 ... 6.40
Harvey,Ill. B5 ... 5.90
LosAngeles 830 ... 6.85
LosAngeles R2 ... 7.35
Mansfield,Mass. B5 ... 6.45
Massillon,O. R2, R8 ... 5.90
Midland,Pa. C18 ... 5.90
Monaca,Pa. S17 ... 5.90
Newark,N.J. W18 ... 6.35
NewCastle,Pa. (17) B4 ... 5.90
Pittsburgh J5 ... 5.90
Plymouth,Mich. P5 ... 6.15
Putnam,Conn. W18 ... 6.45
Readville,Mass. C14 ... 6.45
So.Chicago,Ill. W14 ... 5.90
SpringCity,Pa. K3 ... 6.35
Struthers,O. Y1 ... 5.90
Waukegan,Ill. A7 ... 5.90
Worcester,Mass. W19 ... 6.35
Youngstown F3, Y1 ... 5.90

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md. C19 .. 5.15

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ... 7.425
BeaverFalls,Pa. M12, R2 7.425
Bethlehem,Pa. B2 ... 7.425
Buffalo B5 ... 7.425
Camden,N.J. P13 ... 7.60
Canton,O. T7 ... 7.425
Carnegie,Pa. C12 ... 7.425
Chicago W18 ... 7.425
Cleveland A7, C20 ... 7.425
Detroit R7 ... 7.425
Detroit B5, P17 ... 7.625
Donora,Pa. A7 ... 7.425
Elyria,O. W8 ... 7.425
Gary,Ind. R2 ... 7.425
GreenBay,Wis. F7 ... 7.425
Hammond,Ind. L2, M13 7.425
Hartford,Conn. R2 ... 7.725
Harvey,Ill. B5 ... 7.425
Lackawanna,N.Y. B2 ... 7.425
LosAngeles 830 ... 8.30
Mansfield,Mass. B5 ... 7.725
Massillon,O. R2, R8 ... 7.425
Midland,Pa. C18 ... 7.425
Monaca,Pa. S17 ... 7.425
Newark,N.J. W18 ... 7.60
Plymouth,Mich. P5 ... 7.625
So.Chicago W14 ... 7.425
SpringCity,Pa. K3 ... 7.60
Struthers,O. Y1 ... 7.425
Warren,O. C17 ... 7.425
Waukegan,Ill. A7 ... 7.425
Worcester,Mass. A7 ... 7.725
Youngstown F3, Y1 ... 7.425

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 ... 4.65
Atlanta A11 ... 4.85
Birmingham C15 ... 4.65
Buffalo R2 ... 4.65
Cleveland R2 ... 4.65
Ecorse,Mich. G5 ... 4.75
Emeryville,Calif. J7 ... 5.40
Fairfield,Ala. T2 ... 4.65
FairlessHills,Pa. U5 ... 4.80
Fontana,Calif. K1 ... 5.35
Ft.Worth,Tex.(42) T4 .. 5.10
Gary,Ind. U5 ... 4.65
Houston 85 ... 4.90

Ind.Harbor,Ind. I-2, Y1 4.65
Johnstown,Pa. B2 ....4.65
Joliet,Ill. P22 ....4.65
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.65
LosAngeles B3 ....5.35
Milton,Pa. M18 ....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 ....5.00
Pittsburg,Calif. C11 ..5.35
Pittsburgh J5 ....4.65
Portland,Oreg. O4 ....5.40
SandSprings,Okla. S5 ..5.15
Seattle B3, N14 ....5.40
So.Chicago R2 ....4.65
So.Duquesne,Pa. U5 ....4.65
So.SanFrancisco B3 ....5.40
SparrowsPoint,Md. B2 ..4.65
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 ....4.75
Struthers,O. Y1 ....4.65
Torrance,Calif. C11 ....5.35
Youngstown R2, U5, Y1 4.65

BARS, Reinforcing
(Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2 6.15
KansasCity,Kans. S5 ..6.45
Lackawanna,N.Y. B2 ..6.17
Marion,O. P11 ....5.55
Pittsburgh U8 ....6.17
Seattle B3 ....6.60
Seattle N14 ....6.15
SparrowsPt. ½-1" B2 ..6.15
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS

Avis,Pa. (3) J8 ....4.25
ChicagoHts.(3) C2, I-2 4.55
ChicagoHts.(4) C2, I-2 4.65
Ft.Worth,Tex.(26) T4 ..4.95
Franklin,Pa(3) F5 ....4.55
Franklin,Pa.(4) F5 ....4.65
Marion,O.(3) P11 ....4.20
Moline,Ill.(3) R2 ....4.65
Tonawanda(3) B12 ....4.50
Tonawanda(4) B12 ....4.65
Williamsport,Pa.(3) S19 4.65

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 11.50
Economy,Pa.(D.R.) B14 14.30
Economy(Staybolt) B14 14.65
McK.Rks.(S.R.) L5 ....11.50
McK.Rks.(D.R.)L5 ....16.00
McK.Rks.(Staybolt) L5 17.00

SHEETS

SHEETS, Hot-Rolled Steel
(18 Gage and Heavier)

Ala.City,Ala. R2 ....4.325
Allenport,Pa. P7 ....4.05
Ashland,Ky.(8) A10 ..4.325
Cleveland J5, R2 ....4.325
Conshohocken,Pa. A3 ..4.375
Detroit(8) M1 ....4.425
Dravosburg,Pa. U5 ..4.325
Ecorse,Mich. G5 ....4.425
Fairfield,Ala. T2 ....4.325
FairlessHills,Pa. U5 ..4.375
Fontana,Calif. K1 ....5.075
Gary,Ind. U5 ....4.325
Geneva,Utah C11 ....4.425
GraniteCity,Ill. G4 ....4.525
Ind.Harbor,Ind. I-2, Y1 4.325
Kokomo,Ind. C16 ....4.425
Lackawanna,N.Y. B2 ..4.325
Mansfield,O. E6 (37) ..4.325
Munhall,Pa. U5 ....4.325
Newport,Ky.(8) N9 ..4.325
Niles,O. N12 ....4.325
Pittsburg,Calif. C11 ..5.025
Pittsburgh J5 ....4.375
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 ....4.325
Sharon,Pa. S3 ....4.325
So.Chicago,Ill. W14 ..4.325
SparrowsPoint,Md. B2 ..4.325
Steubenville,O. W10 ..4.325
Warren,O. R2 ....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5, Y1 ..4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 ....5.625
Kokomo,Ind. C16 ....5.475
Niles,O. N12 ....5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 ....7.20
Youngstown Y1 ....7.20

SHEETS, H.R. (14 Ga.&Heavier)
High-Strength Low-Alloy

Cleveland J5, R2 ....6.375
Conshohocken,Pa. A3 ..6.425
Dravosburg,Pa. U5 ....6.375
Ecorse,Mich. G5 ....6.475
Fairfield,Ala. T2 ....6.375
FairlessHills,Pa. U5 ..6.425
Fontana,Calif. K1 ....7.125
Gary,Ind. U5 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 ..6.375
Munhall,Pa. U5 ....6.375
Pittsburgh J5 ....6.375
Sharon,Pa. S3 ....6.375
So.Chicago,Ill. U5 ....6.375
SparrowsPoint(36) B2 ..6.375
Warren,O. R2 ....6.375
Weirton,W.Va. W6 ....6.375
Youngstown U5, Y1 ..6.375

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)

Ashland,Ky.(8) A10 ..4.575
Cleveland R2 ....4.925
Ind.Harbor,Ind. I-2 ..4.575
Warren,O. R2 ....4.925

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Allenport,Pa. P7 ....4.95
Cleveland J5, R2 ....5.325
Conshohocken,Pa. A3 ..5.375
Dravosburg,Pa. U5 ....5.325
Detroit M1 ....5.325
Ecorse,Mich. G5 ....5.425
Fairfield,Ala. T2 ....5.326
FairlessHills,Pa. U5 ..5.375
Follansbee,W.Va. F4 ..4.95
Fontana,Calif. K1 ....6.425
Gary,Ind. U5 ....5.325
GraniteCity,Ill. G4 ....5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 ..5.325
Mansfield,O. E6 ....5.325
Middletown,O. A10 ....5.325
Newport,Ky. N9 ....5.325
Pittsburg,Calif. C11 ..6.275
Pittsburgh J5 ....5.325
Portsmouth,O. P12 ....5.325
SparrowsPoint,Md. B2 ..5.325
Steubenville,O. W10 ..5.325
Warren,O. R2 ....5.325
Weirton,W.Va. W6 ....5.325
Youngstown Y1 ....5.325

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 ....7.875
Dravosburg,Pa. U5 ..7.875
Ecorse,Mich. G5 ....7.975
FairlessHills,Pa. U5 ..7.925
Fontana,Calif. K1 ....8.975
Gary,Ind. U5 ....7.875
IndianaHarbor,Ind. Y1.7.875
Lackawanna(37) B2 ..7.875
Pittsburgh J5 ....7.875
SparrowsPoint(38) B2..7.875
Warren,O. R2 ....7.875
Weirton,W.Va. W6 ....7.875
Youngstown Y1 ....7.875

SHEETS, Cold-Rolled Ingot Iron

Middletown,O. A10 ....5.825

SHEETS, Culvert (16 Gage)

	Cu Alloy	Cu Fe
Ashland,Ky. A10	*6.90*	
Canton,O. R2	6.50	7.10
Dravosburg U5	*6.10*	
Fairfield T2	*6.10*	
Gary,Ind. U5	*6.10*	*6.35*
Ind.Harbor I-2	6.10	6.35
Kokomo,Ind. C16	*6.20*	
MartinsFry. W10	6.10	
Newport,Ky. N9	6.10	6.35
Pitts.,Calif. C11	*6.85*	
SparrowsPt. B2	6.10	

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 ....7.15
Gary,Ind. U5 ....5.95
MartinsFry,O. W10 ....6.35

SHEETS, Galvanized Steel
Hot-Dipped

Ala.City,Ala. R2 ....5.85‡
Ashland,Ky. A10 ....585†
Canton,O. R2 ....5.85‡
Delphos,O. N16 ....6.60‡
Dover,O. R1 ....5.85‡
Dravosburg,Pa. U5 ....5.85†
Fairfield,Ala. T2 ....5.85†
Gary,Ind. U5 ....5.85*
GraniteCity,Ill. G4 ....6.05
Ind.Harbor,Ind. I-2 ..5.85†
Kokomo,Ind. C16 ....5.95‡
MartinsFerry,O. W10 ..5.85*
Middletown,O. A10 ....5.85†
Newport,Ky. N9 ....5.85‡
Niles,O. N12 ....6.85‡
Pittsburg,Calif. C11 ..6.60*
SparrowsPt.,Md. B2 ..5.85†
Steubenville,O. W10 ..5.85‡
Warren,O. R2 ....5.85†
Weirton,W.Va. W6 ..5.85*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....6.575

SHEETS, Galvanized
High-Strength Low-Alloy

Dravosburg,Pa. U5 ....8.60
SparrowsPoint(39) B2 ..8.60

SHEETS, Galvannealed Steel

Canton,O. R2 ....6.25
Dravosburg,Pa. U5 ....6.25
Kokomo,Ind. C16 ....6.60
Newport,Ky. N9 ....6.25
Niles,O. N12 ....7.25

SHEETS, Galvanized Ingot Iron
(Hot-dipped Continuous)

Ashland,Ky. A10 ....6.10
Middletown,O. A10 ....6.10

SHEETS, Electrogalvanized

Cleveland(28) R2 ....6.30
Niles,O.(28) R2 ....6.30
Weirton,W.Va. W6 ....6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) ..8.50
Butler,Pa. A10 (type 2) ..8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 ....5.90
Cleveland R2 ....5.90
Dravosburg,Pa. U5 ....5.90
Gary,Ind. U5 ....5.90
GraniteCity,Ill. G4 ....6.10
Ind.Harbor,Ind. I-2 ....5.90
Middletown,O. A10 ....5.90
Niles,O. N12 ....5.90
Youngstown Y1 ....5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 ....6.60
Yorkville,O. W10 ....7.75

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 ....6.25
Mansfield,O. E6 ....6.25
Middletown,O. A10 ....6.25
Niles,O. N12 ....6.25
Weirton,W.Va. W6 ....6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.65

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Coid Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bross. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod.Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellanceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel&Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.325
Allenport,Pa. P7	4.05
Alton,Ill. L1	*4.50*
Ashland,Ky.(8) A10	*4.325*
Atlanta A11	4.525
Bessemer,Ala. T2	4.325
Birmingham C15	4.325
Bridgeport,Conn. N19	4.625
Buffalo(27) R2	4.325
Conshohocken,Pa. A3	4.375
Detroit M1	*4.425*
Ecorse,Mich. G5	4.425
Fairfield,Ala. T2	4.325
Fontana,Calif. K1	5.075
Gary,Ind. U5	4.325
Ind.Harbor,Ind. I-2, Y1	4.325
Johnstown,Pa.(25) B2	4.325
Lackaw'na,N.Y.(25) B2	4.325
LosAngeles(25) B3	5.075
Milton,Pa. M18	4.325
Minnequa,Colo. C10	*5.425*
NewBritain(10) S15	4.325
N.Tonawanda,N.Y. B11	4.05
Pittsburg,Calif. C11	5.075
Portsmouth,O. P12	*4.325*
Riverdale,Ill. A1	4.325
SanFrancisco S7	5.00
Seattle(25) B3	5.325
Seattle N14	*5.40*
Sharon,Pa. S3	*4.325*
So.Chicago,Ill. W14	4.325
So.SanFrancisco(25) B3	5.075
SparrowsPoint,Md. B2	4.325
Sterling(1) N15	4.325
Sterling,Ill. N15	4.425
Torrance,Calif. C11	5.075
Warren,O. R2	4.325
Weirton,W.Va. W6	4.325
Youngstown U5	4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19	7.50
Carnegie,Pa. S18	6.70
Fontana,Calif. K1	8.85
Gary,Ind. U5	7.20
Ind.Harbor,Ind. Y1	7.20
LosAngeles B3	*8.40*
Newport,Ky. N9	7.20
Sharon,Pa. S3	*7.20*
So.Chicago W14	7.20
Youngstown U5, Y1	7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	6.425
Conshohocken,Pa. A3	6.425
Ecorse,Mich. G5	6.525
Fairfield,Ala. T2	6.425
Fontana,Calif. K1	7.525
Gary,Ind. U5	6.425
Houston S5	6.675
Ind.Harbor,Ind. I-2, Y1	6.425
KansasCity,Mo. S5	6.675
Lackawanna,N.Y. B2	6.425
LosAngeles(25) B3	7.175
Seattle(25) B3	7.425
Sharon,Pa. S3	*6.425*
So.SanFrancisco(25) B3	7.175
SparrowsPoint,Md. B2	6.425
Warren,O. R2	6.425
Weirton,W.Va. W6	6.425
Youngstown U5, Y1	6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	*4.575*
Warren,O. R2	4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	*6.25*
Baltimore T6	*6.25*
Boston T6	*6.80*
Cleveland J5	*6.45*
Cleveland A7	*6.25*
Conshohocken,Pa. A3	6.30
Dearborn,Mich. D3	*6.35*
Detroit D2, M1, P20	*6.35*
Dover,O. G6	*6.25*
Ecorse,Mich. G5	*6.35*
Follansbee,W.Va. F4	5.75
Fontana,Calif. K1	8.20
FranklinPark,Ill. T6	*6.35*
Ind.Harbor,Ind. I-2	*6.35*
Ind.Harbor,Ind. Y1	6.46
Indianapolis C8	5.90
Lackawanna,N.Y. B2	6.45
LosAngeles C1	8.50
NewBedford,Mass. R10	*6.70*
NewBritain(10) S15	*6.25*
NewCastle,Pa. B4, E5	*6.25*
NewHaven,Conn. A7	*7.00*
NewHaven,Conn. D2	*6.70*
NewKensington,Pa. A6	*6.25*
Pawtucket,R.I. R3	6.40
Pawtucket,R.I. N8	*6.80*
Pittsburgh J5	*6.45*
Portsmouth,O. P12	*6.25*
Riverdale,Ill. A1	*6.35*
Rome,N.Y.(32) R6	6.25
Sharon,Pa. S3	*6.25*
SparrowsPt.,Md. B2	6.45
Trenton,N.J.(31) R5	7.30
Wallingford,Conn. W2	*6.70*
Warren,O. B9, T5	5.75
Warren,O. R2	6.25
Weirton,W.Va. W6	*6.25*
Worcester,Mass. A7	*7.10*
Youngstown C8, Y1	6.45

STRIP, Cold-Rolled Alloy

Boston T6	*13.80*
Carnegie,Pa. S18	12.45
Cleveland A7	*13.45*
Dover,O. G6	*13.45*
FranklinPark,Ill. T6	*13.45*
Harrison,N.J. C18	*13.45*
Pawtucket,R.I. N8	*13.80*
Sharon,Pa. S3	*13.45*
Worcester,Mass. A7	*13.75*
Youngstown C8	12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7	*9.30*
Dearborn,Mich. D3	*9.20*
Dover,O. G6	*9.30*
Ecorse,Mich. G5	*9.20*
Ind.Harbor,Ind. Y1	9.30

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	*7.30*	*9.25*	*10.80*	*12.95*	*15.65*
Boston T6	*7.55*	*9.25*	*10.80*	*12.95*	*15.65*
Bristol,Conn. W1			*10.80*	*12.95*	
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	*7.00*	*8.95*	*10.50*	*12.65*	*15.35*
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	*7.10*	*9.05*	*10.60*		
Detroit D2	*7.10*	*9.05*	*10.60*	*12.75*	
Dover,O. G6	*7.00*	*8.95*	*10.50*	*12.65*	*15.35*
FranklinPark,Ill. T6	*7.10*	*8.95*	*10.50*	*12.65*	*15.35*
Harrison,N.J. C18			*10.80*	*12.95*	*15.65*
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
NewBritain,Conn.(10) S15	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4	*7.00*	*8.95*	*10.50*	*12.65*	
NewCastle,Pa. E5	*7.00*	*8.95*	*10.50*	*12.65*	
NewHaven,Conn. D2	*7.45*	*9.25*	*10.80*	*12.95*	
NewKensington,Pa. A6	*7.00*	*8.95*	*10.50*		
NewYork W3		*9.25*	*10.80*	*12.95*	*15.65*
Pawtucket,R.I. N8	*7.55*	*9.25*	*10.80*	*12.95*	*15.35*
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	*7.00*	*8.95*	*10.50*	*12.65*	*15.35*
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	*7.45*	*9.25*	*10.80*	*12.95*	*15.65*
Warren,O. T5	5.75	8.05	9.00	11.15	13.85
Weirton,W.Va. W6	*7.00*	*8.95*	*10.50*	*12.65*	*15.35*
Worcester,Mass. T6	*7.55*	*9.25*	*10.80*	*12.95*	*15.65*
Worcester,Mass. A7	*7.85*	*9.25*	*10.80*	*12.95*	*15.65*
Youngstown C8	5.85	8.05	9.00	11.15	13.85
Spring Steel (Tempered)					
Bristol,Conn. W1			*14.40*	*17.60*	
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6			*14.90*	*18.10*	*21.50*
Harrison,N.J. C18			*14.40*	*17.60*	*21.00*
NewYork W3			*14.40*	*17.60*	*21.00*
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. A7, T6			*14.40*	*17.60*	*21.00*
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	13.25	15.95	19.35

STRIP, Stainless Hot-Rolled

Baltimore T6	19.00
Dunkirk,N.Y. D1	19.00
Harrison,N.J. C18	19.00
Midland,Pa. C18	19.00
Reading,Pa. C18	19.00
Washington,Pa. J3	19.00

STRIP, Stainless Cold-Rolled

Baltimore T6	25.00
Dunkirk,N.Y. D1	25.00
Harrison,N.J. C18	25.00
Midland,Pa. C18	25.00
Reading,Pa. C18	25.00
Washington,Pa. J3	25.00

STRIP, Electrogalvanized

Cleveland A7	*6.40**
Dover,O. G6	*6.25**
Riverdale,Ill. A1	6.55*
Youngstown C8	5.75*
Warren,O. B9, T5	5.75*
Weirton,W.Va. W6	5.75*
Worcester,Mass. A7	*7.30**

*Plus galvanizing extras.

Strip, Galvanized (Continuous)

Sharon,Pa. S3	*6.55*
Warren,O. B9	6.15

TIGHT COOPERAGE HOOP

Atlanta A11	*5.05*
Riverdale,Ill. A1	*4.90*
Sharon,Pa. S3	*4.75*
Youngstown U5	*5.325*

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	9.95	10.95	11.85
Brackenridge,Pa. A4	....	....	9.10	10.10	11.00
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	*8.40*	*9.35*	*9.95*	*10.95*	
Vandergrift,Pa. U5	....	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10		*9.35*	*9.95*	*10.95*	*11.85*

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	*8.80**	*9.80**	*10.40**	*11.40**	
IndianaHarbor,Ind. I-2	....	8.60†	9.60*	10.20*	11.20*
Vandergrift,Pa. U5			*10.10†*	*10.70†*	*11.70†*
Vandergrift,Pa. U5		*8.60**	*9.60**	*10.20**	*11.20**
Warren,O. R2	....	8.60†	10.10	10.70	11.70
Zanesville,O. A10			*10.10*	*10.70*	*11.70*

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	*12.80‡*	*13.35‡*	*13.85‡*	*14.85‡*
Zanesville,O. A10	*12.80‡*	*13.35‡*	*13.85‡*	*14.85‡*

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.00	16.60	17.10	....
Butler,Pa. A10			*17.45*	*17.95*	
Vandergrift,Pa. U5	*14.85*	*15.85*	*17.45*	*17.95*	*13.55‡*
Warren,O. R2	....	....	....	....	13.55‡

*Semiprocessed. †Fully processed only. ‡Coils annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Dravosburg,Pa. U5	7.50	7.75	8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15
ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.175	6.375	6.575

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Dravosburg,Pa. U5	8.80	9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1	8.80	9.05
Pitts.Calif. C11	9.55	9.80
Sp.Pt.,Md. B2	8.90	9.15
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.60
Dravosburg,Pa. U5	6.60
Fairfield,Ala. T2	6.70
FairlessHills,Pa. U5	6.70
Gary,Ind. U5	6.60
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.60
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.35
SparrowsPoint,Md. B2	6.70
Warren,O. R2	6.60
Weirton,W.Va. W6	6.60
Yorkville,O. W10	6.60

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5	*6.65*
Follansbee,W.Va. F4	6.20
Gary,Ind. U5	*6.65*
GraniteCity,Ill. G4	*6.75*
Ind.Harbor,Ind. Y1	6.65
Yorkville,O. W10	6.65

MANUFACTURING TERNES (Special Coated; Base Box)

Dravosburg,Pa. U5	$7.85
Gary,Ind. U5	7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	6.25
Aliquippa,Pa. J5	*6.25*
Alton,Ill. L1	*6.425*
Atlanta A11	6.45
Bartonville,Ill. K4	5.85
Buffalo W12	6.25
Chicago W13	*6.25*
Cleveland A7	6.25
Crawfordsville,Ind. M8	*6.35*
Donora,Pa. A7	6.25
Duluth,Minn. A7	6.25
Fairfield,Ala. T2	6.25
Fostoria,O.(24) S1	5.95
Houston S5	6.50
Jacksonville,Fla. M8	*6.77*
Johnstown,Pa. B2	6.25
Joliet,Ill. A7	6.25
KansasCity,Mo. S5	6.50
Kokomo,Ind. C16	*6.35*
LosAngeles B3	7.20
Minnequa,Colo. C10	*6.50*
Monessen,Pa. P7	5.75
Newark 6-8 ga. I-1	6.90
No.Tonawanda B11	5.75
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Portsmouth,O. P12	*6.25*
Rankin,Pa. A7	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	7.20
SparrowsPoint,Md. B2	6.35
Sterling,Ill.(1) N15	6.25
Sterling,Ill. N15	6.35
Struthers,O. Y1	6.25
Waukegan,Ill. A7	6.25
Worcester,Mass. A7	6.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	*7.90*
Alton,Ill. L1	*8.075*
Bartonville,Ill. K4	7.30
Buffalo W12	7.90
Cleveland A7	7.90
Donora,Pa. A7	7.90
Duluth,Minn. A7	7.90
Fostoria,O. S1	7.20
Johnstown,Pa. B2	7.90
LosAngeles B3	8.85
Milbury,Mass.(12) N6	8.20
Minnequa,Colo. C10	*8.15*
Monessen,Pa. P16	*7.90*
Muncie,Ind. I-7	*8.10*
Palmer,Mass. W12	8.20
Pittsburg,Calif. C11	8.85
Portsmouth,O. P12	*7.90*
Roebling,N.J. R5	7.50
So.Chicago,Ill. R2	7.90
So.SanFrancisco C10	8.85
SparrowsPt.,Md. B2	8.00
Struthers,O. Y1	7.90
Trenton,N.J. A7	8.20
Waukegan,Ill. A7	7.90
Worcester J4	7.50
Worcester A7, T6, W12	*8.20*

WIRE, Upholstery Spring

Aliquippa,Pa. J5	*7.60*
Alton,Ill. L1	*7.775*
Buffalo W12	7.60
Cleveland A7	7.60
Donora,Pa. A7	7.60
Duluth,Minn. A7	7.60
Johnstown,Pa. B2	7.60
KansasCity,Mo. S5	7.50
LosAngeles B3	8.55
Minnequa,Colo. C10	*7.775*
Monessen,Pa. P16	*7.60*
NewHaven,Conn. A7	7.90
Palmer,Mass. W12	7.90
Pittsburg,Calif. C11	8.55
Portsmouth,O. P12	*7.60*
Roebling,N.J. R5	7.20
So.Chicago,Ill. R2	7.60
So.SanFrancisco C10	8.55
SparrowsPoint,Md. B2	7.70
Struthers,O. Y1	7.60
Trenton,N.J. A7	7.90
Waukegan,Ill. A7	7.60
Worcester,Mass. A7	7.90

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1	*12.725*
Bartonville,Ill. K4	11.30
Buffalo W12	12.55
Chicago W13	*12.55*
Cleveland A7	*12.55*
Crawfordsville,Ind. M8	*12.65*
Fostoria,O. S1	11.20
Jacksonville,Fla. M8	*13.08*
Johnstown,Pa. B2	*12.55*
Minnequa,Colo. C10	*12.30*
Monessen,Pa. P16	*12.55*
Muncie,Ind. I-7	*12.75*
Palmer,Mass. W12	12.85
Roebling,N.J. R5	11.50
So.SanFrancisco C10	12.90
Waukegan,Ill. A7	*12.55*
Worcester,Mass. T6	*12.85*
Worcester,Mass. A7	*12.80*

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	9.90
Buffalo W12	10.70
Johnstown,Pa. B2	*10.70*
Minnequa,Colo. C10	*10.825*
Monessen,Pa. P16	*10.70*
Muncie,Ind. I-7	*10.90*
Portsmouth,O. P12	*10.70*
Roebling,N.J. R5	10.20
SparrowsPt.,Md. B2	*10.80*

ROPE WIRE (A)

Bartonville,Ill. K4	9.75
Buffalo W12	9.75
Fostoria,O. S1	9.75
Johnstown,Pa. B2	10.55
Monessen,Pa. P16	*10.55*
Muncie,Ind. I-7	*10.75*
Palmer,Mass. W12	10.05
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
SparrowsPt. B2	10.65
Struthers,O. Y1	10.55
Worcester,Mass. J4	10.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE
(Continued)

WIRE, Tire Bead

Alton,Ill. L1	*14.225*
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	*14.20*
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	*9.00*
Baltimore T6	*9.30*
Buffalo W12	9.00
Cleveland A7	*9.00*
Crawfordsville,Ind. M8	*9.00*
Dover,O. G6	*9.00*
Fostoria,O. S1	7.95
FranklinPark,Ill. T6	*9.10*
Kokomo,Ind. C16	*9.00*
Massillon,O. R8	7.95
Milwaukee C23	*9.20*
Monessen,Pa. P16	*9.00*
Pawtucket,R.I. N8	*9.30*
Riverdale,Ill. A1	9.10
Rome,N.Y. R6	9.00
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	*9.30*

NAIL, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	152
Aliquippa,Pa. J5	*152*
Atlanta A11	154
Bartonville,Ill. K4	139
Chicago,Ill. W13	*152*
Cleveland A9	157
Crawfordsville,Ind. M8	*154*
Donora,Pa. A7	152
Duluth,Minn. A7	152
Fairfield,Ala T2	152
Galveston,Tex. D7	*157*
Houston,Tex. S5	157
Johnstown,Pa. B2	152
Joliet,Ill. A7	152
KansasCity,Mo. S5	157
Kokomo,Ind. C16	*154*
Minnequa,Colo. C10	*157*
Monessen,Pa. P7	137
Pittsburg,Calif. C11	171
Rankin,Pa. A7	152
So.Chicago,Ill. R2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester,Mass. A7	158

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$9.05
Wheeling,W.Va. W10	*9.05*

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
Aliquippa,Pa. J5	*152*
Atlanta A11	154
Bartonville,Ill. K4	139
Crawfordsville,Ind. M8	*154*
Donora,Pa. A7	152
Duluth,Minn. A7	152
Fairfield,Ala. T2	152
Johnstown,Pa. B2	152
Joliet,Ill. A7	152
Kokomo,Ind. C16	*154*
Minnequa,Colo. C10	*157*
Monessen,Pa. P7	137
Pittsburg,Calif. C11	171
Rankin,Pa. A2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester,Mass. A7	158

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$8.77
Buffalo W12	9.35
Donora,Pa. A7	*9.35*
Duluth,Minn. A7	*9.35*
Johnstown,Pa. B2	*9.35*
Joliet,Ill. A7	*9.35*
Kokomo,Ind. C16	*9.45*
LosAngeles B3	*10.14*
Minnequa,Colo. C10	*9.60*
So.Chicago,Ill R2	8.77
SparrowsPt. B2	*9.45*
Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$9.05
Buffalo W12	9.60
Donora,Pa. A7	*9.65*
Duluth,Minn. A7	*9.65*
Johnstown,Pa. B2	*9.65*
Joliet,Ill. A7	*9.65*
Kokomo,Ind. C16	*9.75*
LosAngeles B3	*10.45*
Minnequa,Colo. C10	*9.90*
So.Chicago,Ill R2	9.05
SparrowsPt. B2	*9.75*
Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$9.10
Buffalo W12	9.70
Donora,Pa. A7	*9.70*
Duluth,Minn. A7	*9.70*
Johnstown,Pa. B2	*9.70*
Joliet,Ill. A7	*9.70*
Kokomo,Ind. C16	*9.80*
LosAngeles B3	*11.05*
Minnequa,Colo. C10	*9.95*
So.Chicago,Ill. R2	9.10
SparrowsPt. B2	*9.80*

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	173
Atlanta A11	175
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	*175*
Donora,Pa. A7	173
Duluth,Minn. A7	173
Fairfield,Ala. T2	173
Joliet,Ill. A7	173
Houston S5	178
KansasCity,Mo. S5	178
Kokomo,Ind. C16	*175*
Minnequa,Colo. C10	*178*
Pittsburg,Calif. C11	*197*
So.SanFran.,Calif. C10	197
SparrowsPoint,Md. B2	175
Sterling,Ill.(1) N15	173

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	175**
Aliquippa J5	*172§*
Atlanta A11	*181*
Bartonville,Ill. K4	165
Crawfordsville,Ind. M8	*181*
Donora,Pa. A7	175†
Duluth,Minn. A7	175†
Fairfield,Ala. T2	175†
Houston,Tex. S5	180†
Johnstown,Pa. B2	179*
Joliet,Ill. A7	175†
KansasCity,Mo. S5	180†
Kokomo,Ind. C16	*177†*
Minnequa,Colo. C10	*180***
Monessen,Pa. P7	162
Pittsburg,Calif. C11	195†
Rankin,Pa. A7	175†
So.Chicago,Ill. R2	159**
So.SanFrancisco C10	195**
SparrowsPoint,Md. B2	181*
Sterling,Ill.(1) N15	179*

WOVEN Fence, 9-15 Ga.

	Col.
Ala.City,Ala R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliqppa,Pa.9-14½ga. J5	*165§*
Atlanta A11	*168*
Bartonville,Ill. K4	152
Crawfordsville,Ind. M8	*148*
Donora,Pa. A7	162†
Duluth,Minn. A7	162†
Fairfield,Ala. T2	162†
Houston,Tex. S5	167†
Johnstown,Pa.(43) B2	166
Joliet,Ill. A7	162†
KansasCity,Mo. S5	167†
Kokomo,Ind. C16	*164§*
Minnequa,Colo. C10	*167**
Monessen,Pa. 9 ga. P17	149
Pittsburg,Calif. C11	185†
Rankin,Pa. A7	162†
So.Chicago,Ill R2	146**
Sterling,Ill.(1) N15	166*

WIRE (16 Gage)	An'ld Stone	Galv. Stone
Ala.City,Ala R2	13.15	14.70**
Bartonville K4	13.25	15.15
Buffalo W12	14.50	
Cleveland A7	*14.50*	
Crawf'dsville M8	*14.60*	*16.50*
Fostoria,O. S1	13.25	14.80†
Johnstown B2	*14.15*	*16.40**
Minnequa C10	*14.75*	*16.45***
Palmer,MassW12	14.50	16.05*
Pitts.,Calif. C11	*14.85*	*16.40†*
So.Chicago R2	13.15	14.70
SparrowsPt. B2	*14.60*	*16.50†*
Sterling(1) N15	*14.50*	*16.40*
Waukegan A7	*14.50*	*16.05†*
Worcester A7	*14.80*	

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	7.40	7.80**
Aliquippa J5	*7.40*	*7.925§*
Atlanta A11	*7.50*	*8.025*
Bartonville(48) K4	7.00	7.575
Buffalo W12	7.40	8.80†
Cleveland A7	7.40	
Crawfordsville M8	*7.50*	*8.025*
Donora,Pa. A7	7.40	7.80†
Duluth,Minn. A7	7.40	7.80†
Fairfield T2	7.40	7.80†
Houston,Tex. S5	7.65	8.05†
Jacks'ville,Fla. M8	*7.90*	*8.475*
Johnstown B2(48)	7.40	7.975*
Joliet,Ill. A7	7.40	7.80†
KansasCity,Mo. S5	7.65	8.05†
Kokomo C16	*7.50*	*7.90†*
LosAngeles B3	8.35	8.925*
Minnequa C10	*7.65*	*8.05****
Monessen P7 (48)	6.90	7.45
Palmer,Mass. W12	7.70	8.10†
Pitts.,Calif. C11	8.35	8.75†
Portsmouth,O. P12	*7.40*	
Rankin A7	7.40	7.80†
So.Chicago R2	7.40	7.80**
So.S.Fran. C10	*8.35*	*8.75***
Spar'wsPt.B2(48)	7.50	8.075*
Str'ling(1)(48)	N15 7.40	7.975*
Struthers,O.(48)	Y1 7.40	7.90†
Worcester,Mass.	A7 7.70	....

*Based on 12.50c zinc; †5c zinc; §10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)

4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
½ in. & smaller diam	+3
6 in. and shorter:	
⅞-in. and ⅝-in.	+4
¾-in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	10
Plow	23
Step, Elevator, Tap and Sleigh Shoe	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P., Hex, regular & heavy:	
¾" and smaller	55
⅞" to 1¼", inclusive	58
1¼" to 1½", inclusive	60
1⅝" and larger	55
C.P. Hex regular & heavy:	
All sizes	56
Hot Galv. Nuts (all types):	
¾" or smaller	38
⅞" to 1½", inclusive	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	56

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smaller diam x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	43
Plated finishes	23

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	38
¾-in. through 1 in.	15
Longer than 6 in.:	
¼-in. through ⅝-in.	20
¾-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in. larger 9.25
⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	20.41
1¼	13	....	23.21	20.44
1½	13	21.40	25.65	22.60
1¾	13	25.28	30.31	26.71
2	13	28.33	33.97	29.93
2¼	13	31.91	38.26	33.72
2½	12	34.63	41.52	36.59
2¼	12	38.15	45.74	40.31
2½	12	41.31	49.53	43.65
2¾	12	44.05	52.82	46.54
3	12			

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Standard All No. 7	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	*4.725*	*4.625*	*4.675*	*5.65*
Ensley,Ala. T2	*4.725*	*4.625*	...	*5.65*
Fairfield,Ala. T2	...	...	...	**5.65**
Gary,Ind. U5	4.725	...	...	...
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...	(16)5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	*4.725*	*4.625*	...	*6.15*
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2	5.625
Gary,Ind. U5	5.625
Ind.Harbor,Ind. I-2	5.625
Lackawanna,N.Y. B2	5.625
Minnequa,Colo. C10	*5.625*
Seattle B3	5.775
Steelton,Pa. B2	5.625
Torrance,Calif. C11	5.775

TRACK BOLTS (20) Treated

Cleveland R2	11.50
KansasCity,Mo. S5	11.50
Lebanon,Pa. B2	12.40
Minnequa,Colo. C10	*12.40*
Pittsburgh O3, P14	11.50
Seattle B3	12.90

AXLES

Ind.Harbor,Ind. S13	7.25
Johnstown,Pa. B2	7.25

JOINT BARS

Bessemer,Pa. U5	5.825
Fairfield,Ala. T2	5.825
Ind.Harbor,Ind. I-2	5.825
Joliet,Ill. U5	5.825
Lackawanna,N.Y. B2	5.825
Minnequa,Colo. C10	*5.825*
Steelton,Pa. B2	5.825

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.90
Ind.Harbor,Ind. I-2, Y1	7.90
KansasCity,Mo. S5	7.90
Lebanon,Pa. B2	7.90
Minnequa,Colo. C10	*7.90*
Pittsburgh J5	*7.90*
Seattle B3	8.40
So.Chicago,Ill. R2	7.90
Struthers,O. Y1	7.90
Youngstown R2	7.90

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.l.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ¼ in. x 1.3 in.	21.00
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frght. allowed Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	33.00-43.00†
Bronze, 5000-lb lots	54.25-57.25†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	49.75-57.25
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50*
Zinc, 5000-lb lots	17.75-31.50‡
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh	4.30-4.40
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over ⅝-in.; 6.45c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 2.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 2.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.30c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Ambridge, Pa. N2	13.5	..	17.5	..	20	..	21.5	..	21.5	..	20.75	..	23.25	..
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+1.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	21	7.75	25.5	9
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	21	7.75	25.5	7
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	....	..	....	..	....	..	....	....
Etna, Pa. N2	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Fairless, Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	7
Fontana, Calif. K1	...	...	....	....	....	....	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.25
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	8
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	....	..	....	..	....	..	....	....
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sparrows Pt., Md. B2	23	+5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Wheatland, Pa. W9	23	+5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1⅛		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	....	....	....
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.25
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	9	12.5	+5.25	12.5	+5.25
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+0.25
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (12.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	48.00	48.00
303	....	26.75	34.75	40.00	....	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	39.00	44.25	42.50	45.50	48.25	52.50	52.50
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.50	65.00	63.50	66.00	69.50	73.50	73.50
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	31.00	40.50	48.75	55.25	56.25	57.00	62.00	70.50	70.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%
Stainless:			
302	....	....	28.00
304	28.30	33.60	29.75
304-L	30.30	35.50	....
310	41.30	47.00	....
316	33.40	38.80	42.75
316-L	37.80	43.30	....
316-CB	38.90	45.50	....
321	30.00	35.30	34.25
347	32.20	38.60	44.25
405	23.90	31.10	....
410	23.40	30.60	....
430	23.40	30.60	24.25
Inconel	47.90	63.90	....
Nickel	39.50	54.10	....
Monel	40.80	54.80	....
L-Nickel	41.70	58.50	....
Copper*	....	....	46.00

	Strip, Carbon Base, Cold Rolled 10%	Strip, Carbon Base, Cold Rolled Both Sides
Copper*	26.60	33.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.275	*5% Cr Hot Work*	0.430
Extra Carbon	0.330	*W-Cr Hot Work*	....
Special Carbon	0.390	*V-Cr Hot Work*	....
Oil Hardening	0.430	*Hi-Carbon-Cr*	0.770

Grade by Analysis (%)

W	Cr	V	Co	Mo		$ per lb
18.25	4.25	1	4.75	....	.....	2.475
18	4	1	....	....	.....	1.600
13.75	3.75	2	5	....	.....	2.245
9	3.5	..	....	....	.....	1.180
6	4	2	....	5	.....	1.105
1.5	4	1	....	8.5	.....	0.960

Tool steel producers include; A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Alabama City, Ala. R2	54.50	55.00	....	....
Birmingham R2	54.50	55.00	....	....
Birmingham U6	....	*55.00*	*59.00*	....
Woodward, Ala. W15	*54.00*	*55.00*	*59.00*	....
Cincinnati, deld.	....	*62.70*	....	....
Buffalo District				
Buffalo H1, R2	58.50	59.00	59.50	60.00
Tonawanda, N.Y. W12	58.50	59.00	59.50	60.00
No. Tonawanda, N.Y. T9	....	59.00	59.50	60.00
Boston, deld.	69.15	69.65	70.15	....
Rochester, N.Y. deld.	61.52	62.02	62.52	....
Syracuse, N.Y. deld.	62.62	63.12	63.62	....
Chicago District				
Chicago I-3	58.50	59.00	59.00	59.50
Chicago R2	58.50	....	59.00	....
Gary, Ind. U5	58.50	....	59.00	....
So. Chicago, Ill Y1	58.50	59.00	59.00	59.50
So. Chicago, Ill. U5, W14	58.50	....	59.00	59.50
Milwaukee, deld.	60.67	61.17	61.17	61.67
Muskegon, Mich., deld.	....	65.30	65.30	....
Cleveland District				
Cleveland A7, R2	58.50	59.00	59.00	59.50
Akron, O., deld.	61.25	61.75	61.75	62.25
Lorain, O. N3	58.50	....	....	59.50
Mid-Atlantic District				
Bethlehem, Pa. B2	60.50	61.00	61.50	62.00
NewYork, deld.	....	64.78	65.28	....
Newark, deld.	63.52	64.02	64.52	65.02
Birdsboro, Pa. B10	60.50	61.00	61.50	62.00
Chester, Pa. C31	*54.50*	*55.00*	*55.50*	....
Philadelphia, deld.	*56.16*	*56.66*	*57.16*	....
Steelton, Pa. B2	60.50	61.00	61.50	62.00
Swedeland, Pa. A3	60.50	61.00	61.50	62.00
Philadelphia, deld.	62.16	62.66	63.16	63.66
Troy, N.Y. R2	60.50	61.00	61.50	62.00
Pittsburgh District				
Neville Island, Pa. P6	58.50	59.00	59.00	....
Pittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
McKeesRocks, deld.	....	60.04	60.04	60.54
Lawrenceville, Homestead, Wilmerding, Monaca, deld.	....	60.66	60.66	61.16
Verona, Trafford, deld.	60.69	61.19	61.19	61.69
Brackenridge, deld.	60.95	61.45	61.45	61.95
Bessemer, Pa. U5	58.50	....	59.00	59.50
Clairton, Rankin, So. Duquesne, Pa. U5	58.50	....	....	....
McKeesport, Pa. N3	58.50	....	....	59.50
Midland, Pa. C18	*58.50*	....	....	....

	Basic	No. 2 Foundry	Malleable	Bessemer
Youngstown District				
Hubbard, O. Y1	....	....	59.00	....
Sharpsville, Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	....	....	59.50
Mansfield, O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie, Pa. I-3	58.50	59.00	59.00	59.50
Everett, Mass. E1	60.50	61.00	61.50	....
Fontana, Calif. K1	62.00	62.50	....	....
Geneva, Utah C11	58.50	59.00	....	....
GraniteCity, Ill. G4	*60.40*	*60.90*	*61.40*	....
Ironton, Utah C11	58.50	59.00	....	....
LoneStar, Texas L6	52.00	52.50*	52.50	....
Minnequa, Colo. C10	*60.50*	*61.00*	*61.50*	....
Rockwood, Tenn. T3	....	55.00*	59.00	....
Toledo, O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	....	....

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson, O. G2	*$67.50*
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.50 Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$80.50
Keokuk, Iowa, (Open-hearth & Fdry, freight allowed K2)	85.00
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland A7 (Intermediate)	$63.50
Duluth I-3 (Intermediate)	63.50
Erie, Pa. I-3 (Intermediate)	63.50
Lyles, Tenn. T3	72.50
Steelton, Pa. B2	66.50
Philadelphia, deld.	70.06
Troy, N.Y. R2	66.50

Warehouse Steel Products

Representative prices, cents per pound subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Buffalo, Cleveland, 30 cents; Chicago, Milwaukee, St. Louis, St. Paul, Detroit, Cincinnati, Pittsburgh, 25 cents; Philadelphia, New York, Baltimore, Boston, San Francisco, Los Angeles, and Portland, Oreg, 10 cents; Atlanta, Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Galv. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††*		Carbon	Floor
Atlanta	6.79	7.75	8.37	43.43	7.05	...	6.92	8.89	....	7.08	7.09	8.83
Baltimore	7.03	8.32	9.00	....	7.65	...	7.61	8.62§	13.44	7.93	7.21	8.87
Birmingham	6.70	7.80	8.85	....	6.95	...	7.00	9.35	....	7.20	7.06	9.10
Boston	7.70	8.81	10.27	45.67	7.96	...	7.83	9.53	13.45	8.13	7.89	9.36
Buffalo	6.80	7.90	9.77	....	7.15	...	7.10	7.90	13.10	7.40	7.15	7.70
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.80	7.93	8.50	46.05	7.06	...	7.08	7.75	12.85	7.28	6.99	8.46
Cincinnati	6.92	7.92	8.90	46.10	7.30	...	7.32	8.05	14.09	7.75	7.28	8.71
Cleveland	6.80	7.93	8.85	....	7.16	...	7.14	7.85	12.91	7.61	7.16	...
Detroit	6.99	8.12	8.78	43.50	7.34	...	7.36	8.04	13.06	7.75	7.27	8.65
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45*	....	6.69	6.52	7.64
Houston	7.85	8.75	10.49	....	8.15	...	8.25	9.85	14.00	8.20	7.80	...
Los Angeles	8.05	10.00	11.00	....	8.35	...	8.05	11.25	14.25	8.30	8.06	10.25
Milwaukee	6.89	8.02	8.59	....	7.15	...	7.17	7.94	12.94	7.45	7.08	8.55
Moline, Ill.	6.73	7.73	8.86	....	6.97	...	6.86	7.60	....	7.04	6.87	...
New York	7.46	8.68	9.44	44.95	8.07	...	7.96	9.48	13.28	7.99	7.76	9.19
Norfolk, Va.	7.25	...	...	....	7.65	...	7.65	9.50	....	7.95	7.45	8.95
Philadelphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69
Pittsburgh	6.80	7.93	9.20	48.67	7.16	...	7.08	7.85	13.10	7.28	6.99	8.46
Portland, Oreg.	7.80	8.80	10.65	....	8.00	...	7.95	11.80	15.00	8.15	7.75	...
Richmond, Va.	7.00	...	9.47	....	7.65	...	7.70	8.85	....	7.95	7.20	9.10
St. Louis	7.09	8.22	9.19	43.89	7.35	...	7.37	8.14	13.14	7.68	7.28	8.75
St. Paul	7.46	8.59	9.16	....	7.72	...	7.74	8.51	13.51	7.94	7.65	...
San Francisco	8.10	9.55	9.90	51.65	8.35	...	8.05	11.20	14.25§	8.25	8.06	10.25
Seattle	8.55	10.40	10.80	54.00	8.65	...	8.35	11.70	14.60	8.30	8.20	10.10
Spokane	8.55	11.00¶	10.80	....	9.05	...	8.35	11.80	15.35	8.30	8.20	10.60
Washington	7.50	8.79	7.97	....	8.12	...	8.08	9.09	....	8.40	7.68	9.34

*Prices do not include gage extras; †prices include gage and coating extras, except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **¼-in. and heavier; ††as annealed; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 999 lb and in Los Angeles, 6000 lb and over; stainless sheets, 5000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; §—500 to 9999 lb; ‡—400 to 999 lb; ¶—4000 lb and over; ‖—1000 to 1999 lb; ¶—1000 lb and over; †—1500 to 3999 lb; ¶—2000 to 3999 lb; ¶—f.o.b. local delivery in lots of 10,000 lb and over.

Hats off...

to LUSTERIZED* TRADE-MARK FINISH

"LUSTERIZED FINISH needs no further surface preparation for our use."

"An outstanding development in the industry."

"We're no longer burnishing."

"We have eliminated a grinding operation."

"Your flats look plated."

"Our hats off to your research departments."

Here's what they are saying about this NEW

COLD DRAWN FINISH

Today, It's Industry's most wanted BAR STEEL!

NON-LUSTERIZED

LUSTERIZED

Send in Your Order TODAY

* Trade-Mark Pat. Pend.

COLD FINISHED CARBON AND ALLOY STEEL BARS

BLISS & LAUGHLIN, INC.

GENERAL OFFICES: HARVEY, ILLINOIS

SALES OFFICES IN ALL PRINCIPAL CITIES

FOUR PLANTS:—

HARVEY, ILL.

DETROIT, MICH.

BUFFALO, N. Y.

MANSFIELD, MASS.

U. S. Steel Corp.

Construction, autos and railroads demand more, so . . .

Structurals Remain Tight

"SHORTAGE OF STRUCTURALS is not news. It'll be news when we can get enough steel to fill our needs."

That comment of a disgruntled Chicago purchasing agent for an industrial building firm is typical of the structural market today. Tight, to say the least, it won't get any easier for the rest of the year. "It may not loosen until February or March of next year," says a Pittsburgh purchasing agent.

Backlog Up—The figures below show that, in comparison with 1954, shipments of fabricated structural steel are down while new bookings are up. The backlog has been pushed to a high point for the year (about 1.6 million tons) where it will remain, according to a spokesman for the American Institute of Steel Construction. Shipments over the last half may increase, but so will orders, the institute believes.

There are several reasons for the situation. First is the unusually heavy and steady demand from all segments of the construction industry. Roadbuilding and commercial and industrial construction are showing no signs of letting up. Automobiles still are taking large quantities of small shapes. Bridgebuilding is on the increase. But railroads are putting the real pinch on supply. After nearly two years of limited purchasing, they are trying to enter a fully booked market, and with considerable tonnages, too. Pullman-Standard Car Mfg. Co., Chicago, had a backlog of 2854 cars on May 15. By July 15, the figure stood at 10,400.

Miscalculation—Another reason is that some mills reportedly sacrificed structurals for sheet early in the year. They anticipated increased production of structurals when sheet sales fell off toward midyear. That never came about.

U. S. Steel Corp. says some of the shortage can be traced to the multi-million-dollar expansion program it is undertaking at the Homstead Works in Munhall, Pa. Eventually, the program will result in greater structural capacity, but, at present, it is cutting down production while construction is going on.

Inventory Problems Again—Low inventory at the turn of the year is a definite factor in the pinch, most observers believe. With demand on the increase, consumers have had no cushion to absorb the shock. One Chicago purchasing agent said his company's problem was not in getting contracts, but in getting enough metal to fulfill the ones it already has. He says he could use at least 50 per cent more steel than he can get. As much as firms like this would like to build an inventory, it is impossible to do so.

Warehouses are in no better shape. Tightness has forced many consumers heretofore not warehouse buyers to seek help from that source. One Pittsburgh warehouseman says he is getting far more emergency orders than he can fill. And warehouse purchases in small quantities usually cost at least 25 per cent more than large mill orders.

Delivery Dates—Excess demand not only has extended published delivery dates. It has abolished them for some producers. In the Midwest, delivery is averaging three months or more. One large mill is promising no better than five or six months on some items. One eastern producer isn't quoting a specific delivery time. In the Pittsburgh area, producers are publishing delivery dates, but they are running as much as a month behind schedule. One company may throw out a whole month's orders in an attempt to catch up.

The outlook for the rest of the year

Background for a Shortage

Fabricated Structural Steel
(net tons)

	SHIPMENTS		BOOKINGS	
	1955	1954	1955	1954
January	241,373	245,629	241,373	177,760
February	213,386	253,119	233,885	266,594
March	227,789	285,365	285,434	193,509
April	242,337	293,532	269,703	184,983
May	223,184	253,886	304,498	199,383

Source: American Institute of Steel Construction.

is more of the same, even though shipments undoubtedly will rise. Inland Steel Co. is installing new facilities (for wide flange beams) at Indiana Harbor which will have a theoretical capacity of 325,000 tons annually. Normal product mix will cut that down. The new mill will be in operation late this year. U. S. Steel is reportedly working on plans to expand the South Chicago plant, including rolling facilities. This will not help the structural shortage in 1955, however.

Structural Shapes . . .

Structural Shape Prices, Page 136

While higher steel and fabrication costs may cause delays in the development of some projected construction programs, there are few definite evidences of this. In fact, the gradual emergence of the new cost pattern appears to have stimulated action on some projects.

Production of structurals has been slowed at Pittsburgh by repair activity at the Homestead Works, U. S. Steel Corp. With demand on the increase at the height of the construction season, structurals are in short supply in that area.

Order books are open for the fourth quarter, but this offers little relief to consumers. One producer won't take October tonnage until it is more certain how much capacity it will have open for that month. Generally, producers promise that no quota system will be imposed.

Construction is heading toward a new peak. Awards in western Pennsylvania in May reached record totals, with gains strongest in public works. Contractors think structural steel will be in short supply until early 1956 as result of the strong current demand.

On the Pacific Coast, the Seattle fabricating plant of Bethlehem Pacific Coast Steel Corp. has increased its backlog by 1083 tons for a Navy hangar installation on Whidbey Island, Puget Sound. Other area fabricators have fair backlogs. Several sizable contracts are pending.

Demand for structurals falls heaviest on wide flange sections. The inability to obtain them in tonnages desired is causing delays in building and freight car construction. The surge in freight car programs came a little too late to get steel accommodation.

New contracts for fabricated structural steel in New England reflect the higher cost of plain material, $7 per ton, but numerous eastern shops with firm orders taken at lower price levels will do this work at little or no profit. New England shops also are confronted with labor trouble.

New inquiry and estimating are off in New England, but Connecticut is taking direct bids on 1025 tons of steel piles, Aug. 1, preliminary to a highway program taking an estimated 170,000 tons of steel.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 137 & 138

Some producers of sheets and strip had hoped to have their schedules sufficiently in shape by this time to enable them to make firm fourth quarter commitments. But it hasn't worked out that way. Arrearages have been heavier than expected, and there have been few order cutbacks. New inquiry continues strong.

Some smaller auto builders have canceled tonnage, but the amount involved is relatively small compared with over-all requirements of the automotive industry. Even should the larger motor carbuilders begin to retrench over the next two or three weeks, as generally expected, it appears that there will be more than enough tonnage from other consumers to fill gaps that develop in schedules.

In any event, some sheetmakers are planning to blank out from a month to six weeks of production on some of their major tonnage items in the last quarter. Certain mills are turning away orders for the period from regular customers. They are meeting major requirements, but are being forced, it seems, to give their customers less than their first half pattern—that is against new orders.

Mills hesitate to pare down orders from regular buyers for more reasons than one. Apart from being unable to help customers as much as they would like, late in the year there may be a shift in the market picture. Business they are turning away could look nice on books some months hence.

The policy for fourth quarter booking varies among the producers. All are moving cautiously in committing themselves. Certain large mills are accepting tonnage for the entire period. Others are refusing to make firm commitments. All appear oversold, with the result that blanked out production for the third quarter overflow will cause fourth quarter bookings of new business to be the lightest this year. On some sheet specialties, such as electrical sheets and enameling stock, certain producers are sold out for the year. At least one or two makers are practically out of the market on the major tonnage items. For nine consecutive months sheet mill bookings in the St. Louis area have exceeded shipments. Chances are, any decline in sheet production experienced this quarter will come in late August or early September.

The recent advance in prices does not appear to have discouraged consuming interests to any extent. For the most part the increases were uniform among the producers. There was one notable exception, low-carbon cold-rolled strip. Some makers advanced this grade $14 per ton, others only $10. The market appears to be leveling out at the $10 advance. Several makers that originally posted the $14 increase later adjusted their quotation to $10.

Among large producers reducing prices on cold-rolled carbon strip, are Republic Steel Corp., Weirton Steel Co., U. S. Steel Corp. and Inland Steel Co., removing $4 of the $14 per ton advance effected early this month after the steel wage settlement. At that time smaller producers raised their prices only $10 a ton, recognizing the competition offered by producers of cold-rolled slit sheets, a product that can be substituted for cold-rolled strip where finish and certain other qualities are not important.

The Container Division, Jones & Laughlin Steel Corp., last week announced increases in prices of its steel shipping pails and steel drums. The former is effective July 20; the latter, Aug. 6. Boosts will amount to 7.5 per cent on containers made of cold-rolled steel and about 7 per cent on containers made of hot rolled.

Steel Bars . . .

Bar Prices, Page 136

Hot-rolled carbon bar producers will accept less new business for the fourth quarter than they did the second or third quarters when they overbooked. Arrearages from the second quarter reduce the tonnage they can accept for the final three months.

Some mills report they will have to blank out three to five weeks of production in the fourth quarter to become current with shipment promises. How new orders will compare with business in the first quarter is uncertain. Bar buying in the first three months, however, was relatively slow to pick up.

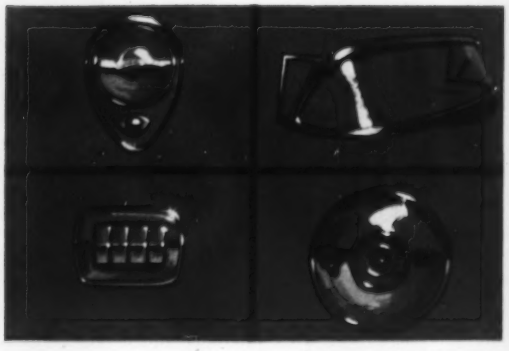
Early this month bar mills fell farther behind on shipments, and they are taxing facilities to the utmost to make up lost ground. Result: Mill shipments are reported exceeding incoming orders. Some makers look for a gradual dip in orders as the current quarter advances. Cold-finished bars are reported less active than hot-rolled at Pittsburgh.

With mill books filled for the third quarter, hot-rolled carbon bar consumers in New England are unable

(*Please turn to page* 147)

modern design specifies stainless steel

McLouth
STAINLESS
Steel
for automobiles

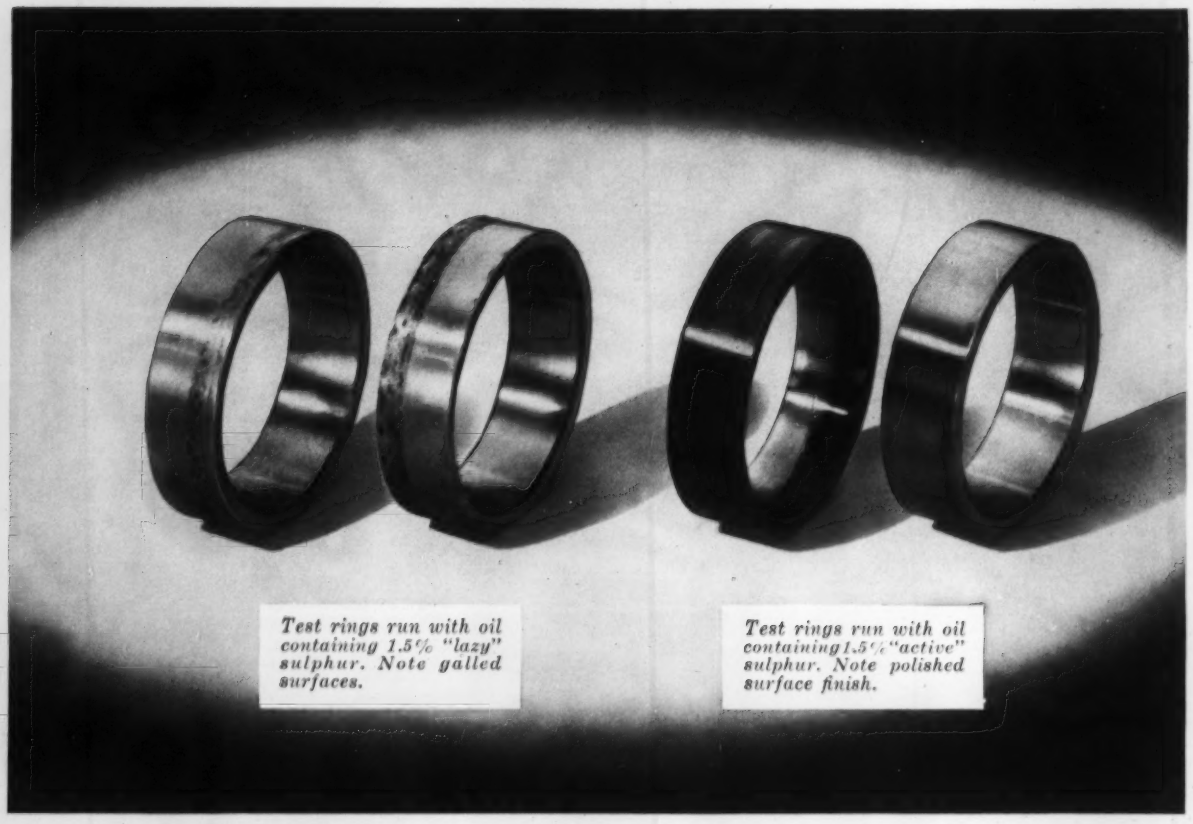


The beautiful bright molding and trim that style your car are made of non-corrosive, easy to clean Stainless Steel. Designers of automobiles and hundreds of other products specify Stainless Steel for its many valuable properties.

For the product you make today and the product you plan for tomorrow specify McLouth high quality sheet and strip Stainless Steel.

McLouth Steel Corporation
Detroit, Michigan

MANUFACTURERS OF STAINLESS AND CARBON STEELS



Test rings run with oil containing 1.5% "lazy" sulphur. Note galled surfaces.

Test rings run with oil containing 1.5% "active" sulphur. Note polished surface finish.

Only ACTIVE Sulphur Provides Fluid Lubrication Under Extreme Pressures

This comparative test proves it! Both tests were run on an SAE Lubricant Tester using two oils with the same percentage of sulphur. The specifications were similar—but look at the results!

The set of rings on the left were run with an oil containing "lazy" sulphur that did not provide the necessary anti-weld qualities. Under the heavy loads present in the test, the rings quickly galled and seized. The pair on the right were run with an oil containing "active" sulphur, the *only* type of sulphur that will prevent galling or seizure. It is performance that counts, not specifications.

"Active" sulphur in a cutting oil, readily reacts with the metal surfaces of the tool, chip and workpiece to produce metallic sulphide films that become fluid lubricants when sufficient heat is generated, and provide lubrication under the high temperatures that exist in the cutting orbit.

Stuart Oil Company's Shop Note Book, Bulletin S-2, contains further information on how to select a sulphurized cutting oil. Write for your copy today, and ask to have "the Man in the Barrel", your Stuart Representative, call too. He will help you select the cutting fluid that will provide the very best results under the conditions you will subject it to.

D. A. STUART OIL COMPANY, LTD.
2735-37 S. Troy St., Chicago 23, Ill.

More than a "Coolant" is Needed

Stuart Oils

Time Tested Cutting Fluids and Lubricants

Plants in: Chicago, Detroit, Cleveland, Hartford, and Toronto, Ontario.

Branch Warehouses and Representatives in principal metal working centers in the United States, Canada and Europe.

(*Concluded from page* 144)

to line up orders for the fourth quarter, or at least, not beyond October. Cold-finished carbon shipments are not so far extended as hot-rolled, and some tonnage is available for September shipment. District consumers bought heavily in May-June and are buying cold-drawn more on a replacement basis. Forge shops are operating on some 1956 automobile volume. For the most part, model changes require some major forgings. This is true of stampings, springs and other parts, but with the exception of Chevrolet, model changes are of "face-lifting" nature.

Plates . . .

Plate Prices, Page 136

Bureau of Ships, Washington, has awarded contracts for six LST vessels: Two, American Shipbuilding Co., Cleveland, $16,263,540; two, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., $15,160,000; two, Avondale Marine Ways, New Orleans, $13,152,222.

Railroads are making heavier demands on the plate mills and are finding supplies scarce. Some carriers must spread equipment orders wider than they had planned to take advantage of inventories.

One road would like to build most of its requirements in its own shops, but can't scrape up enough steel to do so. A leading carbuilder would like to resume operations at one of its car shops, long idle because of lack of business, but can't because of lack of steel.

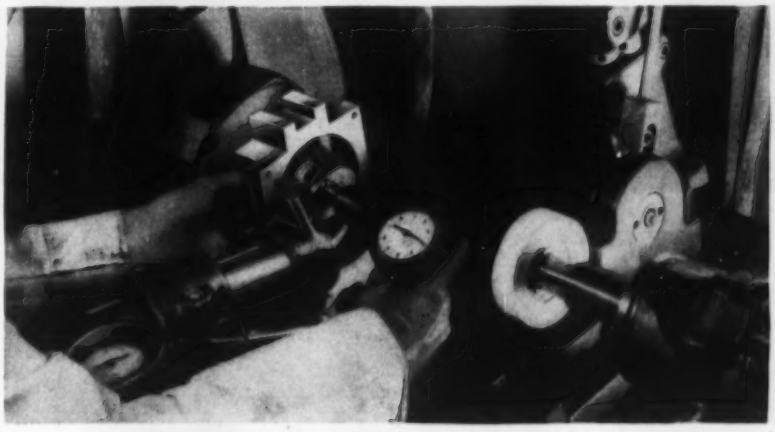
Ship tonnage also is definitely more active. In addition to several tankers placed recently, two ocean liners have been placed with the Ingalls Shipbuilding Corp., Pascagoula, Miss.

Platemakers are grappling with the problem of advance scheduling. They haven't committed themselves much beyond October, and some haven't ironed out their October schedules. Reason: They have more tonnage on order than they have capacity to accommodate promptly.

Some eastern mills haven't officially opened books for the fourth quarter. Some are accepting tonnage on a monthly basis for the period. Some are taking orders for the entire quarter, or at least for what tonnage they have left after blanking out a month or so of production.

Pittsburgh producers report supply tightened considerably recently. In part this was due to lost production. The real pinch stems from rising railroad equipment steel needs on top of strong demands from construction, barge building and miscellaneous fabrication. There will be a substantial carry-over going into the fourth quarter. Still, despite the strong demand and behind-schedule deliveries, producers say there is no

BUT GAGES CAN TELL LIES! Some may not be sensitive enough to detect slight deviations from specified tolerances. Others may calibrate accurately only at the top and bottom of their scales. So, they pass work as OK when it actually isn't. That means costly filing, fitting, selecting and discarding in assembly operations . . . with expensive rework or salvage in addition. Only when you know your gages are right can you cut those costs.



ACCURATE AND SENSITIVE GAGES PAY OFF! Not infrequently gage users are surprised to learn that some of the gages they are using are really not showing up the actual dimensions — they're not sensitive enough. Consequently work is passed that does not conform with specifications — outsized work that later means costly rework, scrap, and assembly slow-down. Federal Gages are made sensitive to point out slight deviations and trends away from specifications and to enable you to make necessary adjustments *before* producing unsatisfactory work.

COMPARE GAGE SENSITIVITIES BEFORE YOU BUY! You'll find that Federal Gages lead the field in detecting minute variations in workpiece dimensions. That's why they cost less in the long run than lower-priced gages. For the complete story on the difference between gage cost and gage price, send for our free booklet, "A Management Blind Spot." It's "must" reading for all executives interested in cost reduction. Why not write today?

FEDERAL PRODUCTS CORPORATION
Dept. 16B, Providence 1, R. I.

Ask **FEDERAL**

FOR ANYTHING IN MODERN GAGES...

Dial Indicating, Air, Electric, or Electronic — for inspecting, measuring, sorting, or automation gaging

serious shortage of plates.

Impact on the plate market of buying for the stepped-up railroad car program will come in fourth quarter. The same is true of shipyard tonnage. New England users, anticipating this bulge, are experiencing difficulty in placing firm orders beyond October. The stringency is confined largely to sheared plates; narrow universal plates are not extended, and some mills can make shipments by late August. Tank heads and flanged material usually can be shipped ahead of plates. Small tank volume is holding at high level.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 136

Higher prices on reinforcing steel items may throttle some building construction in the planning stage. The sharply higher prices will throw some jobs above cost estimates, forcing either further appropriations or abandonment. At the moment this isn't a matter of much concern since all reinforcing production during the third quarter is fully committed.

Mill order backlogs in the Pacific Northwest are reported normal, with the mills in full operation following brief shutdowns early this month for annual overhaul. Considerable business awaits placement in the district.

Stainless Steel . . .

Stainless Steel Prices, Page 140

An inquiry for a minimum of 750 tons, grade 305, stainless, mostly 3/16-in. plates and some No. 12 gage sheets, is out from the Portland Copper & Tank Works Inc., South Portland, Me. The shop has a contract for fabricating nonmagnetic floats used by the Navy in mine sweeping. The contract will require expansion of plant facilities at South Portland to meet delivery on final shipment in 1957.

Tin Plate . . .

Tin Plate Prices, Page 138

Shipments of metal cans during the first five months of this year totaled 1,543,384 tons, against 1,458,047 for the same period last year, according to the Bureau of Census, Department of Commerce. May shipments were 375,821 tons, compared with a revised figure of 321,281 in April and 317,666 in May a year ago.

Wire . . .

Wire Prices, Pages 138 & 139

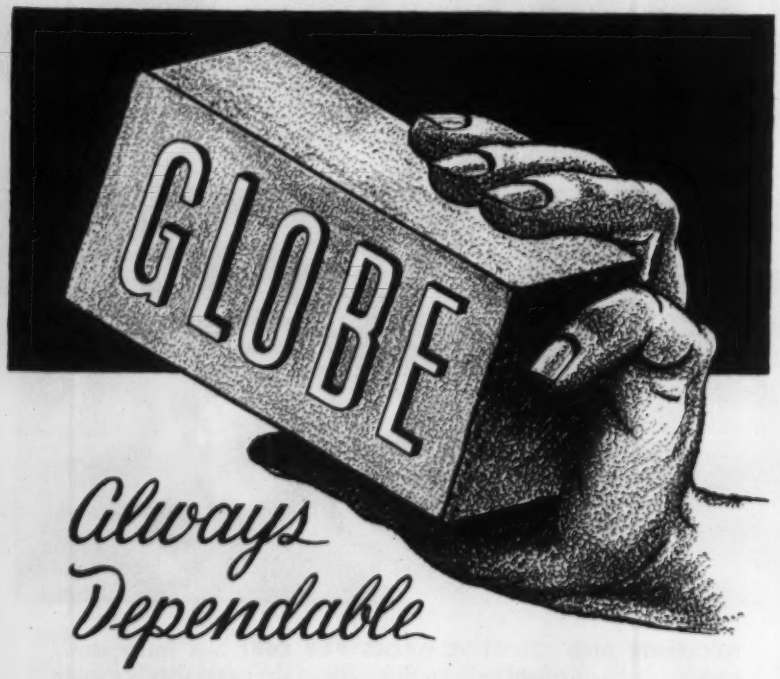
Business in manufacturers wire is increasing, with one leading producer reportedly booked 10 to 12 weeks ahead. Merchant wire demand is described as fair, but generally is over the peak. Nails are moving well. Wire rods are in tight supply.

Except for the finer sizes, wire consumers are placing more forward orders in the East, recognizing the need for more lead time on many grades. Most producers are filled through the third quarter on carbon gages, 7 to 20, while numerous users of cushion and upholstery grades are covered into October. During most of the first half, they had bought on a three-to-four-week basis.

Expected cutbacks or shipment deferments from automobile suppliers have not materialized. More springmakers are producing for the 1956 models.

The long-range outlook for welded wire mesh and other highway requirements is stimulating an increase in producing capacity. Wickwire-Spencer Division, Colorado Fuel & Iron Corp., starts production soon with a new machine which welds 16.5-ft panels, leading the trend toward larger panels. At Buffalo, this producer will have rebuilt its rod mill by Nov. 1, adding 6000 tons to monthly capacity.

Cold-heading wire schedules beyond August are open, but New England mills are filled through the third quarter on more grades in certain size ranges. More carbon wire is going into 1956 automotive parts, no-



SUPERIOR LADLE BRICK

The greater heat resistance of GLOBE brick is well known in the steel industry. Because these bricks, wire cut or dry pressed, last longer—saving much time lost in refractory replacement—they help increase melting capacity. There is a type for every need, so let us place our experience at your disposal.

Lowers Per Ton Cost and Increases Melting Capacity

SERVING THE STEEL INDUSTRY SINCE 1873

The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

tably springs. Cutbacks have been small. Textile volume is moderately improved.

Tool Steel . . .

Tool Steel Prices, Page 140

Prices on tool and high speed steel are rising. Several makers have announced increases. The base price of high speed steels is up 6 cents a pound; tool steel grades, 5.8 per cent. Extra charges are increased.

Tubular Goods . . .

Tubular Goods Prices, Page 140

Cast iron pipe foundries in the Birmingham area have increased prices on cast iron pressure pipe $5 per ton; on fittings, $10 a ton.

Merchant pipe business is active, reflecting a high level of building work. Mills can promise little in the way of shipment before September. Pipemakers are not oversold. They still have tonnage open for this and fourth quarter shipment.

Third quarter order books at Pittsburgh indicate all-out production will be necessary to meet customer requirements. Producers are scheduling necessary repairs to avoid lost output.

Seamless tubes for oil country use are in greatest demand, and are expected to continue active through the summer.

Cast iron pipe demand continues active. New business is coming out steadily for figures. Last week's awards in the Pacific Northwest alone totaled about 1000 tons, involving sizable tonnages at Montesano, Wash., and Portland, Oreg.

Pig Iron . . .

Pig Iron Prices, Page 141

New f.o.b. furnace prices at Chester, Pa. ($54.50 on basic pig iron, $55 on No. 2 foundry and $55.50 on malleable) are $6 a ton under other domestic prices in the Mid-Atlantic district. Chester furnace prices were $10 a ton under the general market—more recently $5 a ton, at least as they applied to foundry and malleable iron.

On a Philadelphia delivered basis, new prices are $56.16 for basic, $56.66 for foundry and $57.16 for malleable.

Pig iron demand is fairly good, considering the time of year. Foundries which have concluded vacation shutdowns are accepting shipments. As has been the trend for several years, foundries which supply castings to the automotive industries specify malleable for an increasingly large portion of their needs. Malleable has assumed the major position in the foundry pig iron market, replacing the No. 2 grade.

In the Chicago district, third quarter demand for iron continues satisfactory, except from foundries doing work for the farm implement industry, which is not quite so active as earlier in the year. Of the districts's 43 blast furnaces, 40 are engaged, compared with 42 at steel strike time. Two of the three inactive units are undergoing repairs.

In the New York district, business isn't off quite so much as pig iron producers expected a month ago. Casting demand is holding up fairly well and is sustaining foundry operations better than anticipated.

St. Louis producers report pig iron demand from distant points—seldom accepted by them—is increasing noticeably. They say local orders are picking up only mildly. Granite City Steel's blast furnaces, which supply most of the area's needs, are pushing production and are discouraging new bookings in an attempt to build a 50,000-ton backlog for an anticipated shutdown of one stack in January. The firm has had two furnaces in continuous basic iron production since last November.

Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.

(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 16-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37 f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy, ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max) $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.
Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.5c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.80-$6.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb plus Ta 60% min, C 0.30% max.) Ton lots, 2" x D, $4.65 per lb of contained Cb plus Ta, deld.; less ton lots $4.70.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5.7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ⅛" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

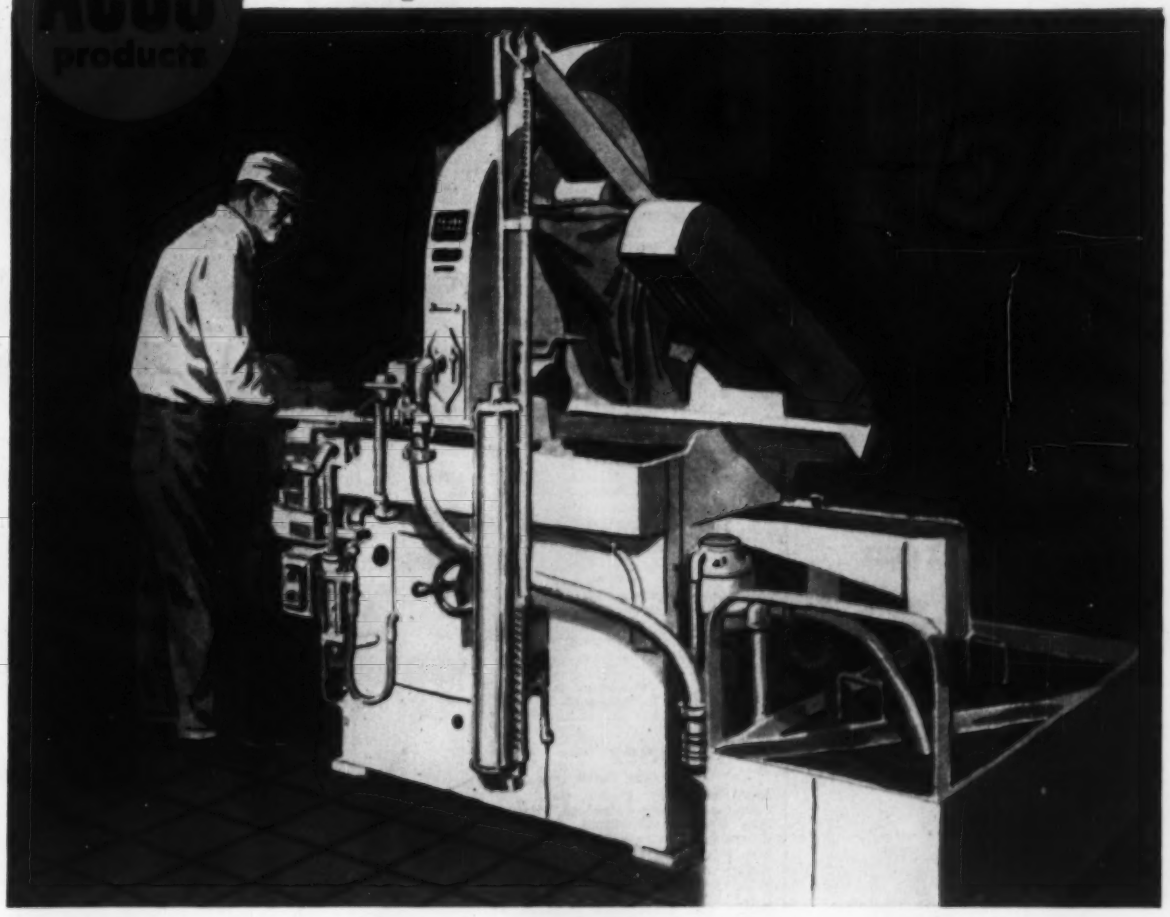
Siminal: (Approx. 20% each Si, Mn, Al; bal, Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn. $90 per gross ton.

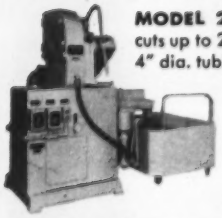
Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington, Pa. $1.24.

Campbell Abrasive Cutters

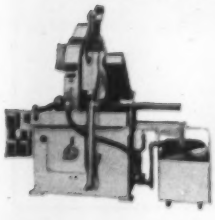


Reduce cutting time on alloy and high carbon steel from minutes to seconds...



MODEL 223
cuts up to 2" dia. solids; 4" dia. tubing

MODEL 28 SEVER-ALL
dry cutter
with capacity to
4" x 4" solids



MODEL 406 CUTAMATIC
cuts up to
6" dia. solids

• CAMPBELL Abrasive Cutters reduce your labor costs and the number of machines required. They do it by cutting alloy and high carbon steel in seconds instead of minutes. They give you a clean, smooth cut without work-hardening, and often eliminate finishing operations.

A complete line of CAMPBELL Abrasive Cutters—fully and semi-automatic—are available to fit your specific cutting requirement. CAMPBELL sales engineering experts will help you select the cutter your work demands. They will consult with you on cutting problems.

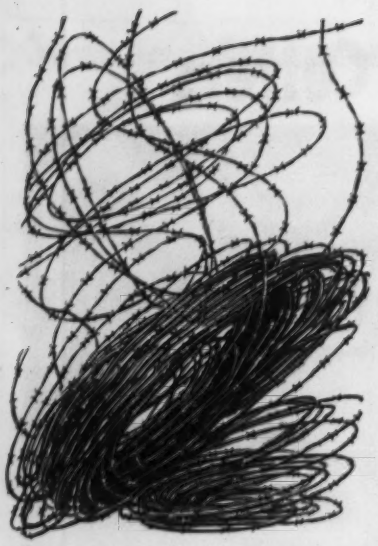
Why not increase YOUR cutting output per man hour?
Write for Bulletin DH-301 on "The Principles of Abrasive Cutting"

ACCO

Campbell Machine Division
AMERICAN CHAIN & CABLE

925 Connecticut Avenue, Bridgeport 2, Connecticut

Wet and Dry Cutters and Nibblers



Buy hand protection

Time out due to hand injuries costs industry more than any other plant accident. Skilled hands are your long suit. Protect them with Jomac® Work Gloves . . . durable, yet low in cost. Write today for our new catalog. Jomac Inc., Dept. E, Philadelphia 38, Pa.

Jomac Hand Guards, made of springy, tough Jomac Cloth, can be worn over gloves, if desired, to give maximum protection against sharp metal, blows or burns. They can be reconditioned repeatedly.

It pays to keep Jomacs on hand

JOMAC

INDUSTRIAL WORK GLOVES

Outwear ordinary work gloves by 900%

Plants in Philadelphia, Pa., and Warsaw, Ind.

Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season, gross ton, $1.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hematite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	$31.50-$32.00
Domestic, scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 85c-87c per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$52.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	31.00-32.00

Domestic

Rail nearest seller

48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

56-60%	$3.50-$3.80
60-65%	3.80-4.25

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., $94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $114; Salina, Pa., $119; Niles, O., $125; Los Angeles, Pittsburg, Calif., $137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $120; Warren, Niles, O., Hays, Pa., $125; Morrisville, Pa., $123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $130; Cutler, Utah, $121.55; Los Angeles, $127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., $137; Morrisville, Pa., Niles, O., $140; Joliet, Ill., $143.

Semisilica Brick (per 1000)

Clearfield, Pa. $130; Philadelphia, $116; Woodbridge, N. J., $114.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $77.50; Wellsville, O., $81.50; Clearfield, Pa., Portsmouth, O., $87; Perla, Ark., $109; Los Angeles $110.25; Pittsburg, Calif., $111.30.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $181; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $225; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $260; Danville, Ill., $258; Clearfield, Pa., $267.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $147; Clearfield, Pa., $148.50; St. Louis, $159.30; Athens, Tex., $155.

Nozzles (per 1000)

Reesdale, Pa., $234.70; Johnstown, Pa., $240.70; Clearfield, Pa., $241.40; St. Louis, $256.45; Athens, Tex., $247.70; Bridgeburg, Pa., $267.50.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $183.50; Clearfield, Pa., $185.50; St. Louis, $195.80; Athens, Tex., $191.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Gibsonburg, Woodville, O., $14.50; Narlo, O., $15; Thornton, McCook, Ill., $15.10; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite (per net ton)

Domestic, dead-burned, bulk, ¾-in. grains with fines: Chewelah, Wash., $38; Luning, Nev., $40.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.50-$14.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$24.50
Camden, N. J., ovens	24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, Ind., ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	24.00
Swedeland, Pa., ovens	24.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	24.25
Portsmouth, O., ovens	24.00
Cincinnati, O., deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.65 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

Fluorspar

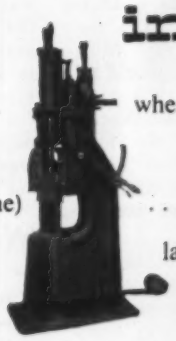
Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net tons, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

Inches: Diam	Length	Per *100 lb
GRAPHITE		
2	24	$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5¼	40	28.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25
CARBON		
8	60	11.40
14, 12, 10	60	11.10
14	72	10.25
17	60	10.25
17	72	9.85
20	84	9.85
20	90	9.65
24	72, 84	9.85
24	96	9.60
30	84	9.75
40.35	110	9.50
40	100	9.50

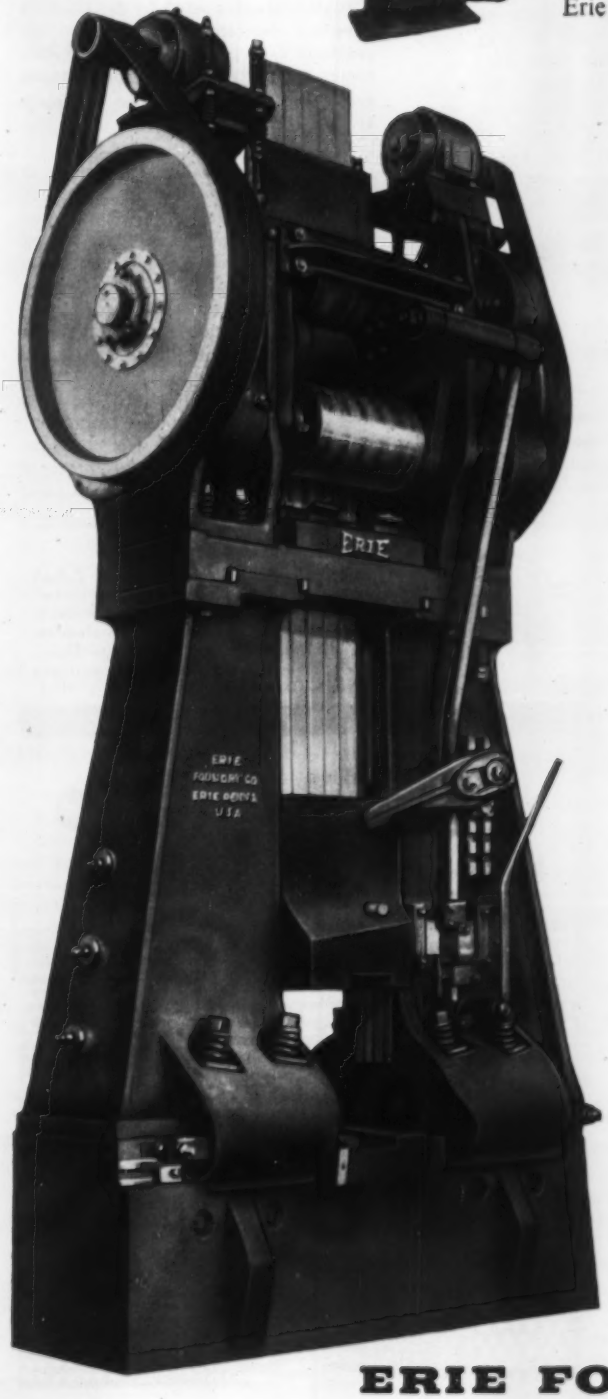
in the good old days



(such as this 100 lb. single frame)

when Erie Foundry was *the first* to use all-steel construction in all our hammers

. . . . . and when hammermen thought a board drop hammer larger than 5,000 lbs. was a wild dream . . . . even then Erie Foundry was a great name in forging hammers



today

Erie Foundry has recently built the world's largest board drop hammer. This 10,000 lb. hammer is at work for Eaton Manufacturing Co's Marion, Ohio forge plant. Eaton is forging 68 lb. net, Flat Back Ring Gears, 16" in diameter, in a single impression die, straight down without blocking or pancaking.

In addition to forging large gears speedily, Eaton likes the Erie 10,000 lb. Board Drop Hammer because the 4-roll lifting head gives longer board life. Air operated board clamps ease the hammerman's job.

As in the good old days, this 10,000 lb. board drop hammer is all-steel . . . and made by Erie.

in our 60th year

ERIE

The Greatest Name in Forging Hammers

ERIE FOUNDRY CO. ERIE, PA.

Iron Ore . . .

Iron Ore Prices, Page 152

Shipments of Lake Superior iron ore totaled 3,060,645 gross tons in the week ended July 18, reports the Lake Superior Iron Ore Association. This was a new weekly peak for the season and compares with 2,551,449 tons moved in the like week a year ago.

Cumulative shipments in the 1955 season stand at 35,448,686 tons. To July 18 last year, the movement was only 28,659,138 tons.

As of July 15, Great Lakes ore vessels were engaged at 97.24 per cent of fleet capacity. This compares with 80.69 per cent a year ago.

Vessel operators increased lake freight rates on iron ore 6.25 per cent, effective July 16. The new rates are: From the head of Lake Superior to lower lake ports, $1.70 per gross ton; Marquette to lower lake ports, $1.53; Escanaba to Lake Erie, $1.275; Escanaba to Lake Michigan, $1.02.

An Interstate Commerce Commission examiner has recommended a rate cut of 30 cents a gross ton for imported iron ore moving by rail from New York and Boston to the steel producing areas around Youngstown. If adopted, the rate would be $3.01 a gross ton.

In the same report, the examiner found the present rate of $2.71 for imported ore hauled by rail from Baltimore and Philadelphia should be continued. In 1953 and 1954 railroads serving New York and Boston sought to have their iron ore rates reduced to meet those from Baltimore and Philadelphia. The ICC suspended proposed rates and started an inquiry.

The ICC examiner now holds that because Baltimore and Philadelphia are about the same distance from Ohio steel areas and hauling costs are about the same from each port, rail rates from both should be on the same level. But, he maintains, since Boston and New York are 268 and 112 miles farther from Youngstown than Baltimore is, a rate of $2.71 a gross ton would not be reasonable. He holds that the recommended rate ($3.01) is based on costs, earnings, geographical advantages, ocean rates and distance to all four ports.

Refractories . . .

Refractories Prices, Page 152

Basic Refractories Inc., Cleveland, effective July 15, increased the price on dead-burned dolomite from $14.50 to $15 per net ton, in bulk, f.o.b., Nario, O. The company also increased the price on dead-burned grain magnesite from $38 to $40 per net ton, in bulk carloads, f.o.b., Luning, Nev., effective July 8. On the same date the charge for shipment in multiwall paper bags of about 100 lb capacity was changed from $5.75 to $6 per net ton.

Warehouse . . .

Warehouse Prices, Page 141

Higher prices posted by distributors have not slackened demand from the previous fast pace. Some emergency orders for plate and structural shapes are being received. Those products are in tightest supply in most districts.

With the possible exception of structurals, shipments in July will be slightly under those made last month. Numerous consumers have closed, or will close, their plants for vacations.

Distributors' inventories are generally well balanced, although some are getting low on plates and structurals, notably wide flanged. With some mills sold well ahead, distributors are having difficulty placing all fourth-quarter tonnage desired. However, a leading eastern producer of standard structurals expects to clear

THE TREND is to Product Improvement & Lower Consumer Prices..

. . . and experienced NICE field men and factory engineers can help you accomplish these important objectives.

NICE is tooled to produce more than 2000 "specials," and more than 750 sizes and types of 25 different catalog standard Series are normally available from stock. Series 1600 (precision) and Series 3000 (unground) are illustrated. They are of the same "precision type" construction and are available shielded, sealed or open.

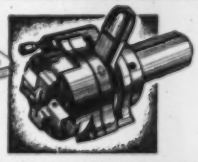
For complete information on the NICE LINE write for Catalog No. 150.

NICE BALL BEARING CO.
NICETOWN • PHILADELPHIA • PENNSYLVANIA

for Corrugating and Complete Line of Culvert Equipment—Slitting and Coiling Equipment for Ferrous and Non-Ferrous Material in All Capacities—Warehouse and Steel Mill Cut to Length Lines for Shearing and Levelling Sheets from Coils—Shears for Shearing Sheets and Plates Both Underdriven and Overdriven Types in Capacities to 1¼" Plate.

STAMCO, Inc., New Bremen, Ohio

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: *A. C. Berbringer, Inc., 334 N. San Pedro St., Los. Angeles, California.* Canada: *F. F. Barber Machinery Co., Toronto, Canada.*

PERFORATED METALS
TO YOUR REQUIREMENTS
FOR
ALL INDUSTRIAL USES
ARCHITECTURAL GRILLES
SEND FOR CATALOG NO. 39
DIAMOND MFG. CO.
BOX 32 WYOMING, PA

July tonnage to warehouses between Aug. 6-13; carryover in wide flanged will be more extended.

Tool steel prices have been advanced about 5.8 per cent by distributors, passing on the mill increases.

Outlook for the third quarter is promising, supported in large measure by commitments held by the construction industries. Small users of sheet, bars and tubing are ordering as actively as they did in the second quarter.

Scrap . . .

Scrap Prices, Page 156

Philadelphia—Following recent substantial purchases by the Fairless, Pa., consumer, prices on No. 1 heavy melting, No. 1 bundles and No. 1 busheling are firm at $42, delivered. No. 2 bundles are $34. These prices were paid by the Fairless buyer. No. 2 heavy melting is higher at $36-$36.50, delivered, on sales to other consumers.

Other steel grades have advanced, with electric furnace bundles at $43, delivered; machine shop turnings and mixed borings and turnings, $25; short shovel turnings, $27.50; low phos structurals and plate, $45-$46; heavy turnings, $37; springs, couplers and wheels, $45-$46; and rail crops, 2 ft and under, $32. Heavy breakable cast is higher at $43.

Foreign demand for steel scrap is less pressing, but it is still sizable.

Cleveland—The scrap market is boiling in this district, largely on broker covering against recent mill commitments. Some scrap from this area is reported moving to Pittsburgh against a recent sale there at $40 for No. 1 heavy melting. Last week a sale in the Valley at $43 further bolstered the market. As a result, steelmaking grades here have advanced about $3 a ton, with dealers reluctant to release material at current levels. Scarcity of production scrap because of vacations and strong steelmaking operations are contributing factors for market strength.

Pittsburgh—Scrap supply is tightening. Exports and 100 per cent mill operations are drying up supplies. Although the last two mill purchases of No. 1 heavy melting raised prices, brokers are offering more than $40 for it. Last sale was at $40. Outlook is for more sales soon.

Turnings and borings and railroad scrap quotations increased an average of $2 a ton in the last half of this month. Little activity is reported in cast iron grades.

New York—Scrap brokers have advanced their buying prices on all steel grades as an aftermath of a further wave of consumer buying at higher levels. Brokers are paying $36-$37 for No. 1 heavy melting and No. 1 bundles, $32-$33 for No. 2 heavy melting and $35-$36 for No. 2 bundles. They have advanced prices on machine shop turnings to $16-$17, mixed borings and short turnings to $17-$18, short shovel turnings to $18-$19. Prices for low phos structurals and plate have been moved up to $38-$39; heavy breakable cast, $35-$36.

Buffalo—Additional buying by out-of-town consumers has further bolstered the local scrap market. Dealers are finding it more difficult to meet commitments on recent orders placed at sharply higher prices.

Boston—Firmer steel scrap prices cover more grades, including lighter industrial scrap, as buying perks up slightly. No. 1 steel and bundles are up $1, but cast grades continue soft on light buying.

Detroit—The scrap market here continues strong, with brokers seemingly in a short position. Prices were stronger on several grades last week, with No. 1 bundles quoted at $34; machine shop turnings, $16; mixed borings and turnings, $16; punchings and plate scrap, $38; charging box cast, $32; No. 1 cupola cast, $39; heavy breakable cast, $32; and unstripped motor blocks, $22.

Chicago—Scrap prices continue to stiffen in both consumer buying and broker-dealer trading. This is happening although consumption is no greater than it has been for the last several months. The pressures providing the price strength appear to stem from the recent substantial price hikes on finished steel and the probability for solid steel demand for remainder of the year. Blast furnace and foundry grades are moving into higher price categories along with steelmaking items.

Cincinnati—Prices remain unchanged here. There has been no new local buying to test the market. Brokers, however, expect a renewal of purchasing this week. If buying materializes, it is felt prices will move up $1 or more per ton.

St. Louis—Scrap trading is slow in this district. Shippers with locations that give them an optional sales point are selling in Kansas City and Chicago where prices are several dollars higher. Those tied by freight to St. Louis are mostly holding their tonnage in anticipation of a stronger market later. Scrap here has not been marked up (over-all) more than $2 to $4 since the steel wage settlement.

Birmingham—Although nearly all other scrap markets have been registering gains the last few weeks, this district's prices have held unchanged—the largest consumer has remained out of the market.

Los Angeles—Following the national trend, scrap prices in this district advanced an average of $2 a ton. No. 1 heavy melting is up from $30 to $32; No. 2 heavy melting also rose $2 to $30; No. 1 bundles moved up $3 to $32; and No. 2 bundles advanced $2 to $25. Machine shop turnings now sell for $10, up $2.

Seattle—The scrap market here is inactive, but receipts are heavy and consumption steady. No price changes were reported last week. Export interests say Japan is a ready buyer despite high prices and ocean freights.

SAVE ON RAILS

BUY "GUARANTEED RELAYERS"

Handle more cars better — spend less to install & maintain with Foster Relayers. "Open-stock" shipments, all sections 12# thru 175#. Switch Materials, Track items.

L.B. FOSTER CO.
PITTSBURGH 30 NEW YORK 7
CHICAGO 4 HOUSTON 2 LOS ANGELES

EFFICIENT PICKLING WITH
RODINE
PICKLING ACID INHIBITORS

SAVES ACID
SAVES STEEL
SAVES MONEY

Use "Rodine" for improved pickling and increased production!

Standard pickling practice the world around.

Write for Descriptive Folder
AMERICAN CHEMICAL PAINT CO
AMBLER, PA.
Detroit, Mich. Niles, Calif. Windsor, Ont.

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

July 20	$40.17
July 13	38.67
June Avg.	35.44
July 1954	27.42
July 1950	37.04

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting	39.00-40.00
No. 2 heavy melting	36.00-37.00
No. 1 bundles	39.00-40.00
No. 2 bundles	33.00-34.00
No. 1 busheling	39.00-40.00
Machine shop turnings	*22.50-23.50*
Mixed borings, turnings	*22.50-23.50*
Short shovel turnings	*26.50-27.50*
Cast iron borings	*26.50-27.50*
Cut structurals, 5 ft lengths	38.00-39.00
Heavy turnings	*36.00-37.00*
Punchings & plate scrap	*42.00-43.00*
Electric furnace bundles	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	34.00-35.00
Heavy breakable cast	34.00-35.00
Unstripped motor blocks	25.00-26.00
No. 1 machinery cast	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	*42.50-43.50*
Rails, 2 ft and under	*49.50-50.50*
Rails, 18 in. and under	*50.50-51.50*
Rails, random lengths	*46.50-47.50*
Railroad specialties	*47.00-48.00*

Stainless Steel Scrap

18-8 bundles & solids	*255.00-265.00*
18-8 turnings	110.00-120.00
430 bundles & solids	100.00-105.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumers's plant)

No. 1 heavy melting	*38.00-39.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*38.00-39.00*
No. 2 bundles	*29.00-30.00*
No. 1 busheling	*38.00-39.00*
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	24.00-25.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	*39.00-40.00*
Cut structural plates 2 ft and under	*45.00-46.00*
Alloy free, short shovel turnings	*29.00-30.00*
Electric furnace bundles	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Charging box cast	*39.00-40.00*
Stove plate	*46.00-47.00*
Heavy breakable cast	*35.00-36.00*
Unstripped motor blocks	*27.00-28.00*
Brake shoes	*34.00-35.00*
Clean auto cast	*47.00-48.00*
Burnt cast	*35.00-36.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*41.00-42.00*
R.R. malleable	48.00-49.00
Rails, 2 ft and under	*51.00-52.00*
Rails, 18 in. and under	*52.00-53.00*
Rails, random lengths	*46.00-47.00*
Cast steel	*41.00-42.00*
Railroad specialties	*42.00-43.00*
Uncut tires	44.00-45.00
Angles, splice bars	*49.00-50.00*
Rails, rerolling	*56.00-57.00*

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*250.00-260.00*
18-8 turnings	*120.00-130.00*
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*32.00-33.00*
No. 1 busheling	*40.00-41.00*
Machine shop turnings	*22.00-23.00*
Short shovel turnings	*27.00-28.00*
Cast iron borings	*27.00-28.00*
Low phos.	*42.00-43.00*
Electric furnace bundles	*42.00-43.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*42.00-43.00*

CHICAGO

No. 1 heavy melting	*38.00-40.00*
No. 2 heavy melting	*33.00-34.00*
No. 1 factory bundles	*41.00-42.00*
No. 1 dealer bundles	*37.00-38.00*
No. 2 bundles	25.00-26.00
No. 1 busheling	*38.00-40.00*
Machine shop turnings	*22.00-23.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*24.00-25.00*
Cast iron borings	*24.00-25.00*
Cut structurals, 3 ft	*41.00-42.00*
Punchings & plate scrap	*42.00-43.00*
Electric furnace bundles	*41.00-42.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Stove plate	*35.00-37.00*
Unstripped motor blocks	*32.00-33.00*
Clean auto cast	*49.00-50.00*
Drop broken machinery	*49.00-50.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*44.00-45.00*
R.R. malleable	*49.00-50.00*
Rails, 2 ft and under	*53.00-54.00*
Rails, 18 in. and under	*54.00-55.00*
Angles, splice bars	*49.00-50.00*
Rails, rerolling	*58.00-60.00*

Stainless Steel Scrap

18-8 bundles & solids	255.00-265.00
18-8 turnings	130.00-140.00
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

Chicago Mercantile Exchange
(Week ended July 20)

No. 1 Heavy Melting	High	Low	Close
Oct.	....	....	36.50*
Jan.	....	....	....

Sales (160-ton units): None.
*Nominal.

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	32.00
No. 2 heavy melting	23.00
No. 1 bundles	*34.00*
No. 2 bundles	21.50
No. 1 busheling	32.00
Machine shop turnings	*16.00*
Mixed borings, turnings	*16.00*
Short shovel turnings	19.50
Punchings & plate scrap	*38.00*

Cast Iron Grades

Charging box cast	*32.00*
No. 1 cupola	*39.00*
Stove plate	32.00
Heavy breakable	*32.00*
Unstripped motor blocks	*22.00*
Clean auto cast	42.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	31.00-32.00
No. 2 bundles	23.00-24.00
No. 1 busheling	32.00-33.00
Cast iron borings	15.00-16.00
Short shovel turnings	24.00-25.00
Machine shop turnings	18.00-19.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	36.00-37.00
Structural plate, 2 ft	36.00-37.00
Unstripped motor blocks	35.50-36.50

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2 ft and under	44.00-45.00
Rails, 18 in. and under	45.00-46.00
Rails, rerolling	43.00-44.00
Rails, random lengths	40.00-41.00
Angles, splice bars	43.00-44.00
Std. steel axles	35.00-36.00

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting	*42.00*
No. 2 heavy melting	*36.00-36.50*
No. 1 bundles	*42.00*
No. 2 bundles	*34.00*
No. 1 busheling	*42.00*
Electric furnace bundles	*43.00*
Machine shop turnings	*25.50*
Mixed borings, turnings	*25.50*
Short shovel turnings	*27.50*
Structurals & plate	*45.00-46.00*
Heavy turnings	*37.00*
Couplers, springs wheels	*45.00-46.00*
Rail crops, 2 ft under	*52.00*

Cast Iron Grades

No. 1 cupola	36.00
Malleable	45.00
Heavy breakable cast	*43.00*
Drop broken machinery	45.00

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*36.00-37.00*
No. 2 bundles	*35.00-36.00*
Machine shop turnings	*16.00-17.00*
Mixed borings, short turnings	*17.00-18.00*
Short shovel turnings	*18.00-19.00*
Low phos. (structural & plate)	*38.00-39.00*

Cast Iron Grades

No. 1 cupola	32.00-33.00
Unstripped motor blocks	22.00-23.00
Heavy breakable	*35.00-36.00*

Stainless Steel

18-8 sheets, clips, solids	245.00-250.00
18-8 borings, turnings	120.00-125.00
430 sheets, clips, solids	105.00-110.00
410 sheets, clips, solids	85.00-90.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*23.50-24.50*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	*22.50-23.00*
Machine shop turnings	*13.00-14.00*
Mixed borings, turnings	*15.50-16.00*
Short shovel turnings	*17.00-17.50*
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	33.00-34.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	26.00-27.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	23.00-24.00
Machine shop turnings	21.00-22.00
Short shovel turnings	24.00-25.00
Cast iron borings	23.00-24.00
Low phos.	37.00-38.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	37.00-38.00
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths	39.00-40.00
Rails, 2 ft and under	44.00-45.00
Railroad specialties	39.00-40.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	31.00-32.00
No. 1 bundles	35.00-36.00
No. 2 bundles	26.00-27.00
No. 1 busheling	35.00-36.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	19.50-20.50
Short shovel turnings	23.00-24.00
Cast iron borings	20.00-21.00
Low phos., 18 in.	40.00-41.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	35.00-36.00
Charging box cast	36.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 18 in. and under	47.00-48.00
Rails, random lengths	41.00-42.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*32.00*
No. 2 heavy melting	*30.00*
No. 1 bundles	*32.00*
No. 2 bundles	*25.50*
Machine shop turnings	*18.00*
Short shovel turnings	*20.00*

Cast Iron Grades

No. 1 cupola	*41.00*
Charging box cast	35.00
Heavy breakable cast	*35.00*
Unstripped motor blocks	33.00
Brake shoes	32.00
Clean auto cast	43.00
Stove plate	*34.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*40.00*
Rails, 18 in. and under	*48.00*
Rails, random lengths	*45.00*
Rails, rerolling	*56.00*
Angles, splice bars	*42.00*

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting	33.00
No. 2 heavy melting	29.00
No. 1 bundles	25.00
No. 2 bundles	23.00
No. 3 bundles	16.00-17.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Electric furnace, No. 1	39.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	36.00-40.00
Heavy breakable cast	28.00
Unstripped motor blocks	30.00-32.00
No. 1 wheels	24.00-25.00
Stove plate (f.o.b. plant)	28.00-29.00
Brake shoes	28.00-29.00

Railroad Scrap

(Delivered consumer's plant)

Rails, random lengths	34.00

LOS ANGELES

No. 1 heavy melting	*32.00*
No. 2 heavy melting	*30.00*
No. 1 bundles	*32.00*
No. 2 bundles	*25.00*
Machine shop turnings	*10.00*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*43.00-45.00*

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	27.00
No. 1 busheling	32.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	14.00
Cast iron borings	14.00
Cut structurals	34.00
Heavy turnings	12.00
Punchings & plate scrap	32.00

Cast Iron Grades

No. 1 cupola	40.00-43.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	28.00
Mixed steel scrap	28.00
Mixed borings, turnings	16.00
Rails, remelting	43.00
Busheling, new factory: Prepared	32.00
Unprepared	28.00
Short steel turnings	16.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

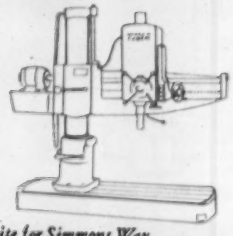
†F.o.b., shipping point.

Leaders in Iron & Steel Scrap Since 1889
For over half a century our experience, personnel, equipment and key office locations have contributed to the steady growth of the iron and steel industry. Possibly our facilities may help you solve a problem in iron or steel scrap—no matter how big or small.
Luria Brothers and Company, Inc.
main office PHILADELPHIA NATIONAL BANK BUILDING, Phila. 7, Pa.
PLANTS
BERWICK, PENNA. DETROIT (TECUMSEH), MICHIGAN
READING, PENNA. PITTSBURGH, PENNA.
MODENA, PENNA.
ERIE, PENNA.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILLINOIS
OFFICES
CLEVELAND, OHIO
DETROIT, MICHIGAN
HOUSTON, TEXAS
LEBANON, PENNA.
MONTREAL, CANADA
LOS ANGELES, CAL.
NEW YORK, N. Y.
PITTSBURGH, PENNA.
PUEBLO, COLORADO
READING, PENNA.
ST. LOUIS, MISSOURI
SAN FRANCISCO, CAL.
SEATTLE, WASH.
IMPORT & EXPORT—LIVINGSTON & SOUTHARD, INC., 99 Park Ave., New York, N. Y., Cable Address FORENTRACO

LET SIMMONS REBUILD AND MODERNIZE YOUR RADIAL DRILLS

Investigate the important production, maintenance and tax savings of SIMMONS ENGINEERED REBUILDING for your: Lathes, Planers, Surface Grinders, Cylindrical Grinders, Vertical Millers, Openside Planers, Automatics, Vertical Boring Mills, Turret Lathes and Radial Drills.

A qualified Simmons rebuilding engineer will discuss it with you. Write, wire or phone today. Simmons Machine Tool Corporation, 1755 North Broadway, Albany 1, N. Y.

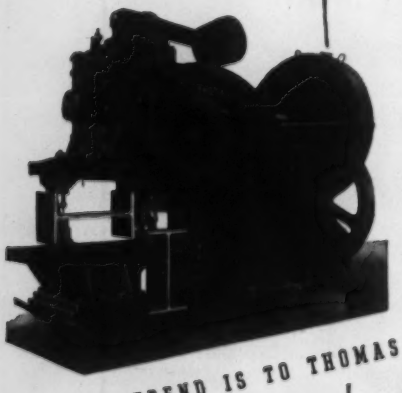


Write for Simmons Way... case histories of rebuilding jobs.

SIMMONS GIVES MACHINE TOOLS A NEW LEASE ON LIFE

Unconditional guarantee...our standard since 1910

BEAM PUNCHING *without tool change*



THE newly designed Thomas Beam Punches are built in sizes to handle beams up to 12"-18"-24"-30" and 36", web and flange punching, with a single tool set-up. Any of the five sizes may be used with or without a Thomas spacing Table, depending on production needs.

THE TREND IS TO THOMAS

THOMAS MACHINE MANUFACTURING CO.
PITTSBURGH 33, PA.

• *Write for further information*

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

51

Rails, Cars . . .

Bolt, Nut, Rivet Prices, Page 139

Reflecting high-level carloadings and indications that volume will continue, railroads are ordering more freight cars and motive equipment than they have for many months. The rush for new equipment is intensifying tight supply conditions in the steel markets, notably in plates and structurals.

Recently, the Baltimore & Ohio railroad entered the market for 1000 seventy-ton hopper cars, 500 seventy-ton gondolas and 1000 fifty-ft boxcars. The Pennsylvania railroad is inquiring for 1000 gondolas and 1000 boxcars. The Santa Fe railroad is asking bids on 2050 freight cars.

Car awards have been heavy of late. Reflecting this, contracts for a total of 3100 freight cars, involving expenditures of $23.5 million were received last week by the Bessemer, Ala., plant of Pullman-Standard Car Mfg. Co. The orders came from three carriers operating in the South.

The largest order was from the St. Louis & San Francisco railroad for 1350 boxcars, 700 fifty-ft cars and 600 40-ft cars. The Seaboard Air Line railroad ordered 1000 fifty-ft boxcars costing $7,590,000. The Southern Railway System contracted for 750 steel hopper cars costing $5 million.

These orders, along with those already on hand, will keep the Bessemer plant operating at capacity until mid-1956.

An increase of more than 10,000 freight cars is reported for June by the American Railway Car Institute and the Association of American Railroads. Orders covered 13,365 cars, against 3041 in May and 1139 in June a year ago.

The jump in car orders, coupled with a falling off in deliveries to 3015 in June, raised the order backlog from 16,886 on June 1 to 27,102 on July 1. A year ago the backlog was 13,860 units.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3260 tons, mill, American Brass Co., Paramount, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

2380 tons, Mondawmin Shopping Center, Baltimore, through William L. Crow Construction Co., that city, to the Baltimore plant of the Vulcan Rail & Construction Co.

1083 tons, maintenance hangar, Naval Base, Whidbey Island, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; James I. Barnes Construction Co., Seattle, general contractor, low at $2,855,000.

900 tons, research building, Esso Standard Oil Co., Bayway, N. J., to Grand Iron Works, Bronx, New York.

335 tons, office, Behr-Manning Division, Norton Co., Watervliet, N. Y., to Smith & Caffrey Co., Syracuse, N. Y.

790 tons, state bridge work, Queens county, New York, to the Klevins Corp., Yonkers, N. Y.

750 tons, Alexander Department Store building, White Plains, N. Y., through J. J. Secoles Co., general contractor, to Schacht Steel Construction Inc., New York.

660 tons, cargo buildings, International Airport, Idlewild, Long Island, through Planet Construction Co., to Bethlehem Steel Co., Bethlehem, Pa.

620 tons, three state bridges, Waterbury, Conn., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Mariani Construction Co., New Haven, Conn., general contractor.

550 tons, state bridge work, St. Lawrence county, New York, through D. A. Dolins, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

430 tons, Track 4, subway, Liberty avenue, Brooklyn, for the New York City Board of Transportation, through Horn Construction Co., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

835 tons, bridges, Massachusetts turnpike, Lee-Becket, Mass., to Klevins Corp., Yonkers, N. Y.; Lizza & Sons, Oyster Bay, N. Y., general contractor.

395 tons, ordnance shop, Chambersburg, Pa., through the Corps of Army Engineers, Baltimore, to the Reading Metalcraft Co., Reading, Pa.

135 tons, state highway work, Montgomery county, New York, through Collins Bros., general contractors, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, state highway bridge, Broome county, New York, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

100 tons, including miscellaneous steel government furnished, military installation, Sitkinak Island, Alaska; J. A. Jones Construction Co., Seattle, general contractor, low at $3,972,930.

STRUCTURAL STEEL PENDING

2344 tons, state bridge work, Allegheny county, Pa., bids Aug. 12; also required are 187 tons of reinforcing bars.

1350 tons, five multipurpose hangars, Lockbourne Air Force Base, Ohio; bids about Aug. 23, Corps of Engineers, Huntington, W. Va.

960 tons, junior high school No. 62, Brooklyn, for New York City Board of Education, Caristo Construction Co., that city, low on general contract.

500 tons or more, 21-story office building for the British Columbia Electric Co., Vancouver, B. C.; general contract to John Laing & Son, Vancouver, low at $1,380,241.

419 tons, state bridge work, Columbia county, Pa., bids Aug. 12.

180 tons, two 3-span stringer bridges, Leominster and Lancaster, Mass.; D'Onfro Sons Co., Leominster, low.

150 tons, service center, Washington Power Co., Spokane, Wash.; general contract to Busboom & Rauh, Spokane, Wash., low at $1,105,451.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1025 tons, steel piles, direct bids to the State Highway Department, Hartford, Conn., Aug. 1.

525 tons, hogback dam, Hartland, Conn.; White Oak Excavators Inc., Plainville, Conn., low.

230 tons, treatment plant, Southwest Suburban Sewer District, Seattle; general contract to Noble W. White, Seattle, low at $539,632.

207 tons, state bridge alterations and expansions, Philadelphia, bids Aug. 26; this project will also require 1650 tons of shapes.

187 tons, state bridge work, Allegheny county, Pa., bids Aug. 12; also required are 2344 tons of shapes.

170 tons, pier, Provincetown, Mass.; Westcott Construction Co., Attleboro, Mass., low.

30 tons, also other metal items, log dump installation, Gardner, Oreg.; Tom Lillebo, Reedsport, Oreg., low at $77,435 to the Bureau of Public Roads.

PLATES . . .

PLATES PLACED

1500 tons, Navy Purchasing Office, Washington, to Colorado Fuel & Iron Corp., Claymont, Del.

100 tons, elevated water storage facilities,

FOR SALE

HASTELLOY W-3/16 INCH WELDING WIRE

10,000 pounds available

Reply Box 287, STEEL
Penton Building Cleveland 13, Ohio

CLASSIFIED

Help Wanted

STAFF ENGINEER

Kaiser Steel Corporation has excellent opportunity for Staff Engineer at Fontana, California, plant. Position requires Mechanical Engineering degree with experience in iron and steel production division including design of coke plant and by-product facilities. Excellent working and living conditions in Southern California. Please send resume giving personal history, age, education, experience and salary requirements to Employment Manager, Kaiser Steel Corp., P.O. Box 217, Fontana California. Replies confidential.

SALES ENGINEERS

Steel Tubing experience preferred. To cover areas Metropolitan New York, Philadelphia, New England and Detroit. Exceptional opportunity with small well-known mill in East. Submit resume—education and business. Reply Box 285, STEEL, Penton Building, Cleveland 13, Ohio.

Positions Wanted

QUALIFIED AND EXPERIENCED SALES ENGINEER is open to represent your company in the Pittsburgh territory. Prefer heavy machinery, mechanical or hydraulic. Reply Box 283 STEEL, Penton Building, Cleveland 13, Ohio.

Age 45, Engineering Education, having many years experience with some employer in Structural Steel and Plate Fabrication—Production, Detailing, Liaison and Estimating. Desires position in West or Far West in related work. Executive Assistant or leading to. Reply Box 286, STEEL, Penton Building, Cleveland 13, Ohio.

UNDISPLAYED CLASSIFIED RATES

ALL CLASSIFICATIONS

Other than "Positions Wanted"

	Set Solid	All Capitals	All Caps Leaded
50 words or less	$15.00	$19.20	$23.40
Each additional word	.30	.38	.47

POSITIONS WANTED

25 words or less	$ 3.60	$ 4.50	$ 5.40
Each additional word	.14	.18	.22

Cash with order necessary on "Positions Wanted"

Keyed address takes seven words. Replies forwarded without charge.

All classified pages are 3 columns, each column 2¼".

Forms close 10 days prior to publication date.

STEEL *The Weekly Magazine of Metalworking*

Penton Building, Cleveland 13, Ohio

RAILWAY EQUIPMENT

FOR SALE

Used — As Is — Reconditioned

RAILWAY CARS— ALL TYPES

"SERVICE-TESTED"

FREIGHT CAR REPAIR PARTS

For All Types of Cars

LOCOMOTIVES

Diesel, Steam, Gasoline Diesel-Electric

RAILWAY TANK CARS

STORAGE TANKS

6,000—8,000 and 10,000-Gallon Cleaned and Tested

CRANES

Overhead and Locomotive

RAILS

New or Relaying

IRON & STEEL PRODUCTS, INC.

General Office
13463 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1213

New York Office
50-d Church Street
New York 7, New York
Phone: BEekman 3-6330

"ANYTHING containing IRON or STEEL"

HOT ROLLED MILD STEEL

17 tons 1¼" round x 10'4"
10 tons 3/16" x 5" x 16'
6 tons ¼" x 1⅝" x 16'
2 tons 5/16" x 1¼" x 8'
(All at warehouse prices)
Also offer 2" National Upsetter, Serial 11876
@$2000.00 including 35 HP motor.

ELECTRICAL MANUFACTURING CO.
Box 217 Battle Creek, Michigan

METALLURGICAL SALES ENGINEER

For District Sales Offices of a leading ferro alloy producer. Graduate metallurgist, preferably experienced in the production of ferro alloys and their application in the steel industry and experienced in sales work. Correspondence will be treated confidential.

Address Box 280, STEEL
Penton Building Cleveland 13, Ohio

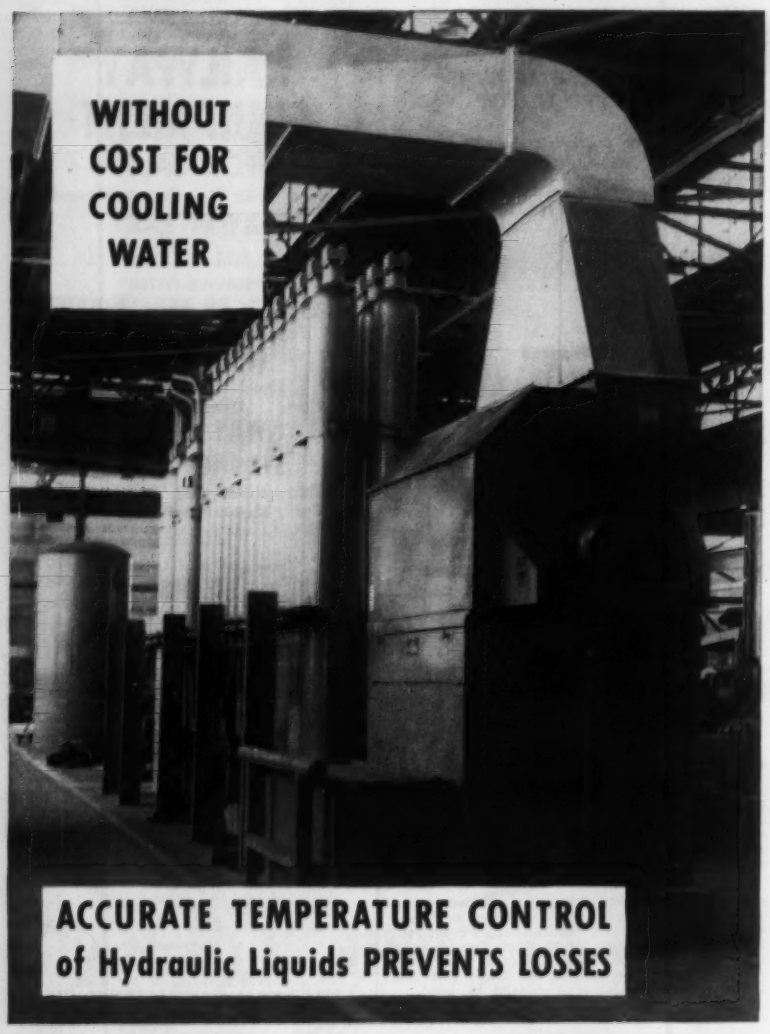
WANTED

SHOP SUPERINTENDENT FOR LARGE STRUCTURAL STEEL FABRICATING PLANT. APPLICANT MUST BE FAMILIAR WITH BRIDGE AND BUILDING STEEL FABRICATION. SALARIED AND CHANCE FOR FUTURE ADVANCEMENT WITH A PROGRESSIVE GROWING CONCERN.

MAN MUST BE MARRIED, UNDER 50 YEARS OF AGE AND HAVE A WIDE AND VARIED EXPERIENCE. REFERENCES REQUIRED. PLANT LOCATED IN A LARGE CITY IN WESTERN NEW YORK.

ALL REPLIES WILL BE TREATED IN STRICT CONFIDENCE.

REPLY BOX 284, STEEL,
PENTON BUILDING CLEVELAND 13, O.



● This NIAGARA AERO HEAT EXCHANGER cools the liquid for a large hydraulic press, preventing heat damage to the pump stuffing boxes. Using outdoor air as the evaporative cooling medium, it removes the heat at the rate of input (1,875,000 BTU/hr.) with no cooling water consumption except a negligible amount evaporated.

Air is free and cheaper to move than water. You can save much expense in pumping, piping and power, and quickly recover the equipment cost from the water saving.

Similar Niagara machines cool water, oils, solutions, lubricants and coolants for many mechanical, electrical and chemical processes. You can cool quench baths, welding machines, plastic molds, furnaces, controlled atmospheres, gases, compressed air either for power or instruments or processes. In a closed system, your coolant is never contaminated. The system is simple and easy to keep up; the equipment has a long, useful life. Select from a wide range of sizes up to 30,000,000 BTU.

Write for Bulletin 120 to obtain a complete description.

NIAGARA BLOWER COMPANY

Dept. S, 405 Lexington Ave. New York 17, N. Y.

Niagara District Engineers in Principal Cities of United States and Canada

Sedalia Air Force Base, Knob Noster, Mo., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

PLATES PENDING

300 tons, bulk storage tanks, Glasgow, Mont., Air Base; general contract to Fred R. Comb Co., Minneapolis, low at $537,791 to U. S. Engineer.

500 tons, tank work for installation in Ohio, Indiana and Michigan for Shell Oil Co., to the General American Transportation Corp., Chicago.

100 tons, 2-million-gal steel water reservoir, also pipe, etc.; bids to Mabel Waterman, clerk, Moses Lake, Wash., July 26; Gray & Osborne, engineer, Takima, Wash.

PIPE . . .

CAST IRON PIPE PLACED

500 tons, 16 in. replacement project, Portland, Oreg.; reported placed with Pacific States Cast Iron Pipe Co., Portland, Oreg.

470 tons, 12 in. ball and joint, Montesano, Wash., to Pacific States Cast Iron Pipe Co., Seattle, low at $66,640.

160 tons, 20-in. steel fabricated pipe, for installation at Amoco, Va., to W. M. Kellogg Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National, 173 diesel units; Canadian Locomotive Co. will build twenty 1200-hp switchers; Montreal Locomotive Works Ltd., twenty-three 1600-hp road units and fifty 1000-hp road switchers; General Motors Corp., Kingston, Ont., thirty-two 1200-hp switchers and forty-five 1750-hp road locomotives; Alco Products, Schenectady, N. Y., three 1000-hp switchers for use on the road's U. S. lines.

Virginian Railway, six diesel-electric locomotives of 1600-hp each, to Fairbanks-Morse Co., Chicago.

Transportation Corps, Marietta, Pa., one self-propelled gasoline railway car, to Whiting Corp., Harvey, Ill.

LOCOMOTIVES PENDING

Virginian Railway, 500 fifty-five-ton hopper cars, placed.

Transportation Corps, Marietta, Pa., nine passenger coaches, to Pullman-Standard Car Mfg. Co., Chicago.

Transportation Corps, Marietta, Pa., three caboose cars, to International Railway Car Co., Buffalo.

St. Louis-San Francisco, 1350 fifty-ton boxcars, 200 seventy-ton covered hopper cars and 200 seventy-ton gondolas, to the Pullman-Standard Car Mfg. Co., Chicago, and 100 fifty-ton flat cars and 150 wood rack cars to its own shops.

St. Louis-Southwestern, 300 fifty-ton boxcars and 100 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago, and 50 wood rack cars to its own Pine Bluff, Ark., shops.

Illinois Central, ten 70-ton covered hopper cars to General American Transportation Corp., Chicago.

Kansas City Southern, 75 seventy-ton covered hopper cars and 6 chair cars to ACF Industries Inc., New York.

Chicago Rock Island & Pacific, 200 fifty-ton boxcars to ACF Industries Inc., New York, and one rail diesel passenger car to the Budd Co., Philadelphia.

Western Pacific, 300 boxcars to Pullman-Standard Car Mfg. Co., Chicago.

Atlantic Coast Line, 5 air dump cars to Magor Car Corp., New York.

Texas & Pacific, 13 outfit cars to its Marshall, Tex., shops.

New York Central, 300 fifty-ton boxcars to its Merchants Dispatch shops, East Rochester, N. Y.

Atchison, Topeka & Santa Fe, 2050 freight cars; 1850 to be built in commercial shops; 200, on the basis of present plans, in its own shops.

Pennsylvania Railroad, 1000 gondolas and 1000 boxcars, bids asked; purchase may involve a substantially larger number of cars.

Baltimore & Ohio, 1000 seventy-ton hopper cars, 1000 fifty-ft box cars, and 500 seventy-ton gondola cars; bids asked.

Advertising Index

Allied Research Products, Inc. 126
Alter Co., Alloy Metal Division 128
American Broach & Machine Co., A Division of Sundstrand Machine Tool Co. 120
American Chain & Cable, Campbell Machine Division 151
American Chemical Paint Co. 6, 155
American Steel & Wire Division, United States Steel Corporation 17, 73
Armco Steel Corporation 37
Austenal Laboratories, Inc., Microcast Division 72
Avondale Marine Ways, Inc. 22

Babcock & Wilcox Co., The, Refractories Division 74
Babcock & Wilcox Co., The, Tubular Products Division Inside Front Cover
Bakelite Co., A Division of Union Carbide & Carbon Corporation 25
Baldwin-Lima-Hamilton Corporation, Standard Steel Works Division 13
Barry Controls, Inc. 28
Basic Refractories, Inc. 93
Bethlehem Steel Co. 1
Birdsboro Steel Foundry & Machine Co. 8
Bliss & Laughlin, Inc. 142
Bridgeport Brass Co. 100

Campbell Machine Division, American Chain & Cable 151
Carborundum Co., The 117, 118
Carborundum Co., The, Refractories Division 23
Chicago Steel Service Co. 125
Clemson Bros., Inc. 16
Columbia-Geneva Steel Division, United States Steel Corporation 17, 20, 73
Continental Foundry & Machine Co. 99
Coolidge Corporation 61

Detroit Stamping Co. 60
Diamond Mfg. Co. 154
Dravo Corporation [illegible]

Eastern Machine Screw Corporation, The 154
Elastic Stop Nut Corporation of America 109
Electric Controller & Mfg. Co., The 38
Electric Steel Foundry Co. 78
Electro Metallurgical Co., A Division of Union Carbide & Carbon Corporation 29
Erie Foundry Co. 153
Ex-Cell-O Corporation 4, 5

Farval Corporation, The Inside Back Cover
Federal Products Corporation 147
Firth Sterling, Inc. 68
Foster, L. B., Co. 155

General Box Co. 79
Globe Brick Co., The 148
Great Lakes Carbon Corporation, Electrode Division 70, 71
Green, A. P., Fire Brick Co. 114
Gregory Industries, Inc., Nelson Stud Welding Division 135

Hallden Machine Co., The 122
Haynes Stellite Co., A Division of Union Carbide & Carbon Corporation 26
Hobart Brothers Co. 3
Homestead Valve Manufacturing Co. 10
Hyatt Bearings Division, General Motors Corporation 54

Illinois Clay Products Co. 107
Ingalls Iron Works Co., The 149
International Nickel Co., Inc., The 34
Iron & Steel Products, Inc. 159

Jomac, Inc. 152
Jones & Laughlin Steel Corporation 91, 123

Kaiser Aluminum & Chemical Corporation 112, 113
Koppers Co., Inc., Tar Products Division 12

Lapointe Machine Tool Co., The 82
Lindberg Engineering Co. 76, 77
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation 104, 162
Lurie Brothers & Co., Inc. 157

McLouth Steel Corporation 145

Mahon, R. C., Co., The 94
Mesta Machine Co. Back Cover
Metal & Thermit Corporation, United Chromium Division 15
Morgan Construction Co. 49
Match & Merryweather Machinery Co., The 50
Mueller Brass Co. 121
Mundt, Charles, & Sons 161

Noresco Equipment Corporation 80
National Acme Co., The 27
National Steel Corporation 9
National Tube Division, United States Steel Corporation 17, 73
Nelson Stud Welding Division of Gregory Industries, Inc. 135
New Departure, Division of General Motors 57
Newport Steel Corporation 133
Niagara Blower Co. 160
Nice Ball Bearing Co. 154
Norton Co. 21

Ohio Steel Foundry Co., The 62

Pennsylvania Salt Manufacturing Co. 33
Phillips Petroleum Co. 2

Republic Steel Corporation 96, 97
Rockford Machine Tool Co. 30, 31
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 81

Sciaky Bros., Inc. 67
Sharon Steel Corporation 7
Simmons Machine Tool Corporation 158
Stamco, Inc. 154
Standard Pressed Steel Co. 131
Standard Steel Works Division, Baldwin-Lima-Hamilton Corporation 13
Standard Tube Co., The 75
Stuart, D. A., Oil Co., Ltd. 146
Sundstrand Machine Tool Co., American Broach & Machine Co. Division 120
Superior Tube Co. 65

Taylor-Winfield Corporation, The 124
Tennessee Coal & Iron Division, United States Steel Corporation 17, 20, 73
Thomas Machine Manufacturing Co. 158
Timken Roller Bearing Co., The, Steel & Tube Division 58

Ulbrich Stainless Steels 6
Union Carbide & Carbon Corporation, Bakelite Co. 25
Union Carbide & Carbon Corporation, Electro Metallurgical Co. 29
Union Carbide & Carbon Corporation, Haynes Stellite Co. 26
Union Carbide & Carbon Corporation, Linde Air Products Co. 104, 162
United Chromium Division, Metal & Thermit Corporation 15
United Engineering & Foundry Co. 127
United States Rubber Co., Mechanical Goods Division 11
United States Steel Corporation, Subsidiaries 17, 18, 19, 20, 73
United States Steel Export Co. 17, 20, 73
United States Steel Supply Division, United States Steel Corporation 17, 20, 73

Valley Mould & Iron Corporation 40

Washburn Wire Co. 24
Wean Engineering Co., Inc., The 103
Wairton Steel Co. 9
Williams-White & Co. 14

Youngstown Sheet & Tube Co., The 32

Table of Contents, Page 5

Classified Advertising, Page 159

MUNDT

PERFORATED METAL MEANS PERFECT SCREENS

Specially Fabricated for ALL INDUSTRIES BY

CHARLES MUNDT & SONS

53 FAIRMOUNT AVE.
JERSEY CITY 4, N. J.
PHONE—DELAWARE 3-6200

Send for Illustrated Catalog

ONE wide-range "OXWELD" W-45 BLOWPIPE handles EVERY welding and heating job

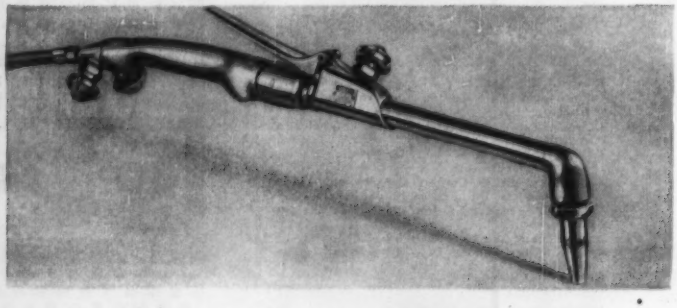
Trade-Mark

*NO OTHER SINGLE BLOWPIPE OFFERS THIS **EXTENSIVE RANGE!***

Anyone whose daily work includes welding and heating will readily appreciate the amazing wide range and versatility of the new OXWELD W-45 Blowpipe. Its 18 head sizes (2 to 300 cu. ft. per hr. capacity) provide a perfect flame for every metal thickness. Light sheet to heavy plate, *one blowpipe does it all!*

From chrome-plated tip to offset hose connections, the W-45 shows the results of over a decade of development work by LINDE engineers. Its exclusive "jiffy-lock" heads, "form-fit" handle, and advanced styling are as modern as guided missiles and atomic power. "O" ring gas seals, flame-stabilizing mixers of improved type, and many other innovations put this blowpipe far ahead of the field in economy, ease of operation, and low-cost maintenance.

See for yourself how you can enjoy tomorrow's operating standards today with an OXWELD W-45 Blowpipe. Ask your LINDE representative for a demonstration, or write for free booklet, F-8684.



CW-45 Cutting Attachment adapts the W-45 Blowpipe for cutting steel up to 8 inches thick.

Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: LINDE AIR PRODUCTS COMPANY
Division of Union Carbide Canada Limited, Toronto
(formerly Dominion Oxygen Company)

Linde Trade-Mark

The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

How Farval lubrication makes a turbine behave!

FARVAL—
Studies in Centralized Lubrication
No. 171

THIS hydraulic turbine had costly maintenance problems. Every few months, 6 to 8 expensive bearings had to be replaced. Old-fashioned grease gunning just couldn't keep lubricant in bearings. Repairs interfered with electric power production.

Farval Lubrication Engineers were called in. A Farval System of Centralized Lubrication exactly suited to the turbine's needs was recommended. Result—lubrication troubles ended. Downtime was eliminated. Now, even bearings under water keep working properly. Farval works as the turbine operates—no time out for lubrication. Manpower is saved, because Farval is wholly automatic. Important money is saved. In 14 years, the manager reports thousands saved in bearings and lubricant. These savings led to Farval Systems on 9 other turbines.

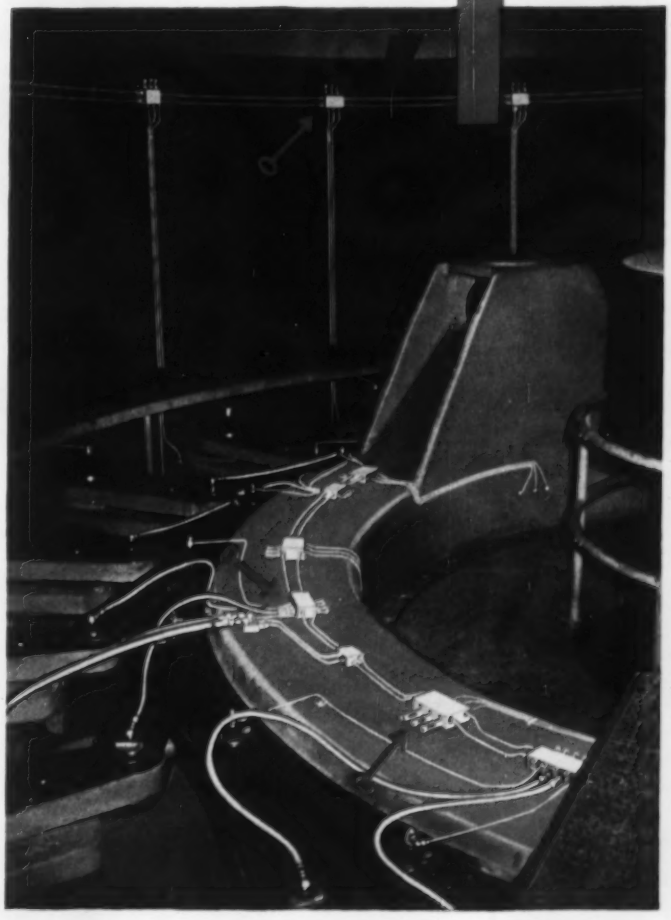
Farval saves in many industries

This is a typical example of the economies Farval brings to industrial equipment. Farval is a simple, dependable system that lubricates quickly, without shutdown, from one central pumping station. Oil or grease is delivered unfailingly, to each bearing served, in the exact amount *when* required. And, Farval Centralized Lubrication Systems, manual or automatic, can be installed on new or old equipment.

Free Bulletin tells you all

Find out how Farval can save for you and pay for itself in quick order. Write for helpful technical advice and ask for Bulletin 26. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



KEYS TO ADEQUATE LUBRICATION — Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

Shearing* LINES

Designed and Built by MESTA

* HIGH-SPEED SHEARING, SIDE TRIMMING AND SLITTING EQUIPMENT FOR SHEET AND TIN GAUGE STRIP STEEL

MESTA 93" SHEET SHEARING LINE WITH TRIMMER AND COMBINATION FLYING SHEAR AND LEVELLER

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA